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ning of each regular issue of the PCT Gazette.

(54) Title: **NUCLEIC ACIDS AND ENCODED POLYPEPTIDES FOR USE IN LIVER DISORDERS AND EPITHELIAL CAN-
CER**

(57) Abstract: The invention relates to nucleic acids and to corresponding encoded polypeptides and to their use for the diagnosis,
prevention and/or treatment of liver disorders and neoplastic disorders, especially cancer of the liver and other epithelial tissues,
benign liver neoplasms such as adenoma and other proliferative liver disorders such as focal nodular hyperplasia (FNH) and cirrhosis.
The invention further relates to methods of diagnosing and treating these disorders.

WO 2005/085861 A2

Description

NUCLEIC ACIDS AND ENCODED POLYPEPTIDES FOR USE IN LIVER DISORDERS AND EPITHELIAL CANCER.

Technical Field

- [001] The invention relates to nucleotides and to corresponding encoded proteins and to their use for the diagnosis, prevention and/or treatment of liver disorders and neoplastic disorders, especially cancer of the liver and other epithelial tissues, benign liver neoplasms such as adenoma and other proliferative liver disorders such as focal nodular hyperplasia (FNH) and cirrhosis. The invention further relates to methods of diagnosing and treating these disorders.
- [002] The development of cancer in general is characterized by genetic mutations that alter activity of important cellular pathways including, for example, proliferation, apoptosis (cell death), response to stress and epithelial/stroma interactions. It is increasingly recognized that identification of nucleic acids that are deregulated in cancer can provide important new insight into the mechanisms of neoplastic transformation. Identification of deregulated nucleic acid expression in precancerous stages, such as macro regenerative nodules and the "large" and "small" cell change in liver cancer, provide understanding of early events in malignant transformation. Similarly, identification of deregulated gene expression in disorders characterized by tissue proliferation and remodeling, such as FNH and cirrhosis in the liver may distinguish nucleic acids involved in proliferation and malignant transformation. Together such deregulated nucleic acids and the encoded gene products have potential as new diagnostic markers for cancer. Moreover, the products of these deregulated nucleic acids *per se* are targets for therapeutic intervention in the prevention and/or treatment of these disorders in human patients.
- [003] The liver plays a vital role in the metabolism of proteins, lipids, carbohydrates, nucleic acids and vitamins. There are numerous disorders effecting the liver that cannot be diagnosed, prevented or treated effectively, such as hepatocellular carcinoma (HCC). Examination of HCC is particularly well suited for the identification of deregulated gene expression in cancer. This is because tissue samples of HCC can be obtained from surgically resected tumors and the tumors are well circumscribed solid structures with little stromal tissue. Furthermore, as indicated above, there is the possibility for comparative analyses of benign and malignant tumors as well as cirrhosis, a non-neoplastic condition. If the limitations in the art of identifying differentially expressed genes associated with liver disorders could be overcome, this comparative approach may enable identification of deregulated nucleic acids

specifically involved in the processes of cellular proliferation and tissue remodeling in a mature organ (e.g., in cirrhosis) as well as the identification and discrimination of gene expression alterations associated with hyperplasia (such as FNH) and with benign and malignant neoplasms (e.g., adenoma and HCC). In HCC there is an urgent need for new and better diagnostic and therapeutic capabilities. Deregulated genes in liver cancer may also be highly relevant to other cancers of the gastrointestinal tract and indeed with other carcinomas (epithelial derived cancers) as these tissues share a common embryological origin.

[004] On a global basis, hepatocellular carcinoma (HCC) belongs to the most common malignant tumors accounting for about 1 million deaths/year (Ishak et al., 1999, Atlas of Tumor Pathology. Fascicle 31. Armed Forces Institute of Pathology, Washington, DC).

[005] Definitive diagnosis of neoplastic liver disorders such as HCC and many other tumors relies upon histopathological evaluation of biopsy specimens. This invasive surgical procedure is generally not undertaken until symptoms appear and the disease is then most often in advanced stages, thereby limiting therapeutic intervention options. Thus there is a need to improve diagnostics and methods of diagnosis. In addition, early diagnosis is crucial but hampered by late onset or even a lack of specific clinical symptoms. At diagnosis most HCC tumors are no longer amenable to surgical resection (except encapsulated tumors or the fibrolamellar variants) (Chen and Jeng, 1997, J. Gastroenterol. Hepatol., 12:329-34); moreover, they are highly resistant to cytostatic therapy (Kawata et al., 2001, Br. J. Cancer, 84:886-91). Overall, death usually occurs within 1 year after diagnosis. Thus, markers for early detection, prognostic indicators, and effective prevention and/or treatment regimens for HCC are highly desirable in this field.

[006] In contrast, unlike the well-studied situation in colorectal cancer, liver adenoma may not represent a precursor lesion of HCC. Similarly, although cirrhosis and hepatitis viral infections are clearly risk factors for HCC, these conditions are not prerequisite for the development of HCC. Certain liver lesions may represent HCC prestages such as macro regenerative nodular hyperplasia, but this is not yet confirmed (Shortell and Schwartz, 1991, Surg Gynecol Obstet., 173:426-31; Anthony, P. in MacSween et al, eds. Pathology of the Liver. 2001, Churchill Livingstone, Edinburgh). Although these disorders are diagnosed by histopathological investigation of liver resections and liver biopsies, no efficient method exists for earlier or non-invasive detection of these conditions. Again, there is immediate need for diagnostic and prognostic markers for these neoplasms and for non-invasive detection of these disorders.

[007] Within the past decade, several technologies have made it possible to monitor the

expression level of a large number of transcripts within a cell at any one time (see, e.g., Schena et al., 1995, Science, 270:467-470; Blanchard et al., 1996, Nature Biotechnology, 1996, 14:1649). Transcript array technology has been utilized for the identification of genes that are up regulated or down regulated in various disordered states. Several recent studies have utilized this technology to examine changes in gene expression in HCC. These studies have variously revealed deregulation (i.e., over- and underexpression) of genes encoding liver specific proteins in HCC cell lines and HCC tissues relative to controls. Moreover the studies revealed genes essential for cell cycle control, stress response, apoptosis, lipid metabolism, cell-cell-interaction, DNA repair and cytokine and growth factor production (e.g., Graveel et al, 2001, Oncogene, 20:2704-12; Tackels-Horne et al, 2001, Cancer, 92: 395-405; Xu et al, 2001, Cancer Res., 61:3176-81). However, there is little concordance in the gene expression patterns reported in these studies that may be due to differences in experimental design and/or to the heterogeneity of HCC tissue *per se*. Moreover, the etiologies of these HCCs are an important factor. Chronic hepatitis B and C virus infections are the major causes of HCC but damage from alcohol and chronic liver metabolic disorders are also recognized to result in HCC and the mechanisms responsible for development of a tumor from these different etiologies are likely to differ. Taken together, until now no satisfactory diagnostics and methods of diagnosing have been developed in order to be able to intervene in liver disorders.

[008] The same applies to the therapy of liver disorders, and epithelial cancers. For HCC for instance, there is no effective therapeutic option except resection and transplantation but these approaches are only applicable in early stages of HCC, limited by the access to donor livers, and associated with severe risks for the patient. In addition, these approaches are extremely expensive. These cancers respond very poorly to chemotherapeutics, most likely due the normal liver function in detoxification and export of harmful compounds. Several other therapeutic options, such as chemoembolization, cryotherapy and ethanol injection are still in an experimental phase and the efficacy of these is not established. Surgical intervention remains the best treatment option but it is not possible to define with precision the extent of the tumor. This invasive procedure therefore, is suboptimal from the perspective of treatment. Furthermore, the lack of early diagnostics for specific liver dysfunctions leads most often to advanced progression of the disease that further confounds therapeutic options and dramatically increases patient mortality from these diseases (Jansen P.L., 1999, *Neth. J. Med.*, 55:287-292). Thus until now no satisfactory therapies have been developed in order to be able to intervene in liver disorders, and other epithelial cancers. Furthermore, in the state of the art, recognition of the different subtypes of liver disorders such as HCC precursor lesions, benign liver neoplasms, and metabolic

liver diseases such as alcoholic liver disease and cirrhosis, as revealed by differential gene expression, have not been disclosed. A summary of the key disease features of some of the disorders evaluated in the invention is provided in Table 1.

[009] **Table 1: Diseases features**

Table 1

DISORDER	Cellular proliferati on	Tissue remodeli ng	Clonal cell expansio n	Neoplasia	Transformation n/ Malignant potential
Cirrhosis	+	+			
FNH	+	+	+/-		
Adenoma	+	+	+	+	
HCC	+	+	+	+	+

Summary of the Invention

[010] The invention relates to nucleotides and to corresponding encoded proteins and their use for the diagnosis, prevention and/or treatment of liver disorders, especially of hepatocellular carcinoma (HCC), and epithelial cancers, pre-cancerous liver lesions, benign neoplasms such as adenoma, and other proliferative liver disorders such as focal nodular hyperplasia (FNH) and cirrhosis. The invention also relates to vectors and cells comprising such nucleic acids, and to antibodies or antibody fragments directed against said polypeptides and nucleic acids.

[011] The invention further relates to methods of diagnosing and treating these disorders. The evaluation of multiple disorders with overlapping but distinct morphological and clinical features provides new information for identification and discrimination and ultimately new therapeutic strategies for these disorders according to invention.

Disclosure of Invention

[012] A unique approach employed in this invention utilizes discrete, pathologist-confirmed liver cancer pathologies for production of disease specific cDNA libraries enriched in genes specifically up- and down-regulated in HCC compared with a pool of non-neoplastic human livers. The library is a genome-wide representation of deregulated gene expression in HCC and therefore includes all potential HCC deregulated genes. Repetitive hybridization to these library clones with labeled expressed nucleic acids from many additional discrete, pathologist-confirmed liver cancer samples (HCCs) and non-malignant liver lesions indicated nucleic acids highly deregulated in HCC. The surprising finding is that this approach provides deregulated

nucleic acids that had not previously been identified as well as many deregulated nucleic acids that were not before associated with HCC, the elevated expression of which can also be associated with other neoplasms. These HCC deregulated genes and proteins are the subject of this invention.

- [013] The screening and verification strategy is already inventive *per se* owing to the elaborate and defined choice of parameters. Identification of differentially expressed genes according to the invention relies upon histopathologically distinguished liver disease tissue for comparison of gene expression changes in disorders of the human liver. Non-diseased reference liver samples for the experiments are also diagnostically confirmed.
- [014] The object of the invention is a method of diagnosis of a liver disorder, liver cancer and/or epithelial cancer, wherein at least one compound selected from the group consisting of a polypeptide according to the sequence SEQ ID 1 to SEQ ID 93 (Table 2A to 2D), a functional variant thereof, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, an antibody or a fragment of the antibody directed against one of the aforementioned polypeptides, or variants thereof, is identified in the sample of a patient and compared with at least one compound of a reference library or of a reference sample.
- [015] Another object of the invention is a method of treating a patient suffering from a liver disorder or an epithelial cancer, wherein at least one compound selected from the group consisting of a polypeptide according to the SEQ ID 1 to SEQ ID 93, a functional variant of one of the aforementioned polypeptides, a nucleic acid encoding one of the aforementioned polypeptides or a functional variant thereof, a variant of one of the aforementioned nucleic acids, a nucleic acid which is a non-functional mutant variant of one of the aforementioned nucleic acids, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, a cell comprising one of the aforementioned nucleic acids, a cell comprising the aforementioned vector, an antibody or a fragment of one of the aforementioned antibodies directed against one of the aforementioned polypeptides or against a functional variant thereof, a vector comprising a nucleic acid coding for one of the aforementioned antibodies, a vector comprising a nucleic acid coding for one of the aforementioned antibody fragments, a cell comprising the vector comprising a nucleic acid coding for one of the aforementioned antibodies, and a cell comprising the vector comprising a nucleic acid coding for one of the aforementioned antibody fragments, is administered to the patient in need of a the treatment in a therapeutically effective amount.
- [016] Another aspect of the invention is a pharmaceutical composition comprising at least one compound selected from the group consisting of a polypeptide according to the

invention, a functional variant thereof, a nucleic acid encoding one of the aforementioned polypeptides or a functional variant thereof, a variant of one of the aforementioned nucleic acids, a nucleic acid which is a non-functional mutant variant of one of the aforementioned nucleic acids, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, a cell comprising one of the aforementioned nucleic acids, a cell comprising the aforementioned vector, an antibody directed against one of the aforementioned polypeptides, an antibody directed against a functional variant of one of the aforementioned polypeptides, a fragment of one of the aforementioned antibodies, a vector comprising a nucleic acid coding for one of the aforementioned antibodies, a vector comprising a nucleic acid coding for one of the aforementioned antibody fragments, a cell comprising the vector comprising a nucleic acid coding for one of the aforementioned antibodies, and a cell comprising the vector comprising a nucleic acid coding for one of the aforementioned antibody fragments and, optionally, suitable additives or auxiliaries.

[017] The accession numbers of the polypeptides according to the invention and their cDNAs are shown in Table 2A to 2D.

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[047] **Table 2A to 2D: Polypeptides and cDNAs with their respective SEQ ID numbers and accession numbers from the GenBank database.**

[048]

Table 2A

Gene	Polypeptide (SEQ ID)	Accession number	DNA (SEQ ID)	Accession number
PI4K2	1	NP-060895	94	NM_018425
ZNF216	2	NP_005998	95	NM_006007
AKR1C1	3	NP_001344	96	NM_001353
dUT	4	NP_001939	97	NM_001948
PACE4	5	NP_002561	98	NM_002570
BIGH3	6	NP_000349	99	NM_000358
PRKAR1A	7	NP_002725	100	NM_002734
s.t. Ocia	8	NP_060300	101	NM_017830
SDCCAG28	9	NP_006636	102	NM_006645
PRDX1	10	NP_002565	103	NM_002574
TMP21	11	NP_006818	104	NM_006827
IQGAP2	12	NP_006624	105	NM_006633
Rab2	13	NP_002856	106	NM_002865
ARF1	14	NP_001649	107	NM_001658
HSPC1	15	NP_005339	108	NM_005348
TLR5	16	NP_003259	109	NM_003268
GAP-SH3	17	NP_005745	110	NM_005754
Crisp-3	18	NP_006052	111	NM_006061
TM4SF4	19	NP_004608	112	NM_004617

AQP9	20	NP_066190	113	NM_020980
LOC51716	21	NP_057364	114	NM_016280
Cystatin	22	NP_000091	115	NM_000100
Ki	23	NP_005780	116	NM_005789

[049]

[050]

[051]

Table 2B

Gene	Polypeptide (SEQ ID)	Accession number	DNA (SEQ ID)	Accession number
Porimin	24	NP_443164	117	NM_052932
PTPRZ1	25	NP_002842	118	NM_002851
Rab9 effector p40	26	NP_005824	119	NM_005833
RBap48	27	NP_005601	120	NM_005610
PABPC1	28	NP_002559	121	NM_002568
NF1/B2	29	NP_005587	122	NM_005596
RPL7	30	NP_000962	123	NM_000971
HNRPDL	31	NP_005454	124	NM_005463
OBCL6	32	novel	125	novel
SNRPG	33	NP_003087	126	NM_003096
KREV-1	34	NP_002875	127	NM_002884
DRB5	35	NP_003833	128	NM_003842
PKCI-1	36	NP_005331	129	NM_005340
IMPACT	37	NP_060909	130	NM_018439
BMI	38	NP_005171	131	NM_005180
G3BP	39	NP_005745	132	NM_005754
RHEB2	40	NP_005605	133	NM_005614
MARCKS	41	NP_002347	134	NM_002356
ALURBP	42	NP_003124	135	NM_003133
PPGB	43	NP_000299	136	NM_000308
GRB2	44	NP_002077	137	NM_002086

TRAP1	45	NP_057376	138	NM_016292
PDHB	46	NP_000916	139	NM_000925
DAD-1	47	NP_001335	140	NM_001344
PSME2	48	NP_002809	141	NM_002818
QP-C	49	NP_006285	142	NM_006294
MTRPS33	50	NP_444263	143	NM_053035

[052]

Table 2C

Gene	Polypeptide (SEQ ID)	Accession number	DNA (SEQ ID)	Accession number
ARF4	51	NP_001651	144	NM_001660
DDB1	52	NP_001914	145	NM_001923
GNG10	53	NP_004116	146	NM_004125
DP1	54	NP_002810	147	NM_002819
ATP1B1	55	NP_001668	148	NM_001677
SLC25A3	56	NP_002626	149	NM_002635
SNC6	57	NP_003923	150	NM_003932
OMG	58	NP_002535	151	NM_002544
PB1S	59	NP_002784	152	NM_002793
RPS21	60	NP_001015	153	NM_001024
MMP-2	61	NP_004521	154	NM_004530
YWHAZ	62	NP_663723	155	NM_145690
PPP3R1	63	NP_671709	156	NM_147180
CTNNA1	64	NP_001894	157	NM_001903
ADCYAP1	65	NP_001108	158	NM_001117
syntenin	66	NP_005616	159	NM_005625
topoisomerase IIb	67	NP_001059	160	NM_001068
UMP-CMPK	68	NP_057392	161	NM_016308
PSMD4	69	NP_722544	162	NM_153822
hu_BTTF3	70	NP_001198	163	NM_001207
rhoA	71	NP_001655	164	NM_001664

LDH-B	72	NP_002291	165	NM_002300
TBXA2-R	73	NP_001051	166	NM_001060
hu_CAP	74	NP_006357	167	NM_006366
hu_PP2a-cat	75	NP_002706	168	NM_002715
SDHC	76	NP_002992	169	NM_003001

[053]

Table 2D

Gene	Polypeptide (SEQ ID)	Accession number	DNA (SEQ ID)	Accession number
hu_GDP-di2	77	NP_001166	170	NM_001175
CCNI	78	NP_006826	171	NM_006835
Mac25	79	NP_001544	172	NM_001553
TBP	80	NP_003185	173	NM_003194
FDX1	81	NP_004100	174	NM_004109
NLVCF	82	NP_003767	175	NM_003776
GNG3	83	NP_036334	176	NM_012202
RCN2	84	NP_002893	177	NM_002902
hu_adk2	85	NP_001616	178	NM_001625
hu_Dcsa19	86	NP_009035	179	NM_007104
c/EBP	87	NP_001797	180	NM_001806
Rab GG	88	NP_004573	181	NM_004582
**c-syn-1	89	NP_002028	182	NM_002037
**c-syn-2	90	NP_694592	183	NM_153047
**c-syn-3	91	NP_694593	184	NM_153048
PPP1R15A	92	NP_055145	185	NM_01433
SCL5A6	93	NP_066918	186	NM_021095

[054] [(**c-syn represents three alternative nucleotide transcripts with corresponding three protein products]

[055]

[056] A subset of these nucleic acids according to the invention have been shown by RT-PCR analysis to be specifically expressed or deregulated in other cancers of epithelial origin and preferably not in corresponding normal human tissue(s). These nucleic acids

include SEQ ID Nos. 94 to 186 (provided in Table 2A to 2D). Deregulated nucleic acids in liver cancer may preferably be highly relevant to other cancers of the gastrointestinal tract as these tissues share a common embryological origin. Consequently, these nucleic acids and the encoded polypeptides may preferably be similarly utilized for diagnostics methods, pharmaceutical compositions and methods of prevention and/or treatment of these epithelial cancers.

[057] The polypeptides and nucleic acids according to the invention have in common that they are differentially expressed in a sample isolated from a patient suffering from a disorder according to the invention compared to a reference sample. The regulation of the polypeptides and nucleic acids according to the invention is essential for the pathologic process and which are thus in a direct or indirect relationship with diagnosis, prevention and/or treatment of disorders according to the invention. The polypeptides and the nucleic acids according to the invention do not belong to the targets known until now such that surprising and completely novel approaches for diagnosis and therapy result from this invention.

[058] Generally, the analysis of differentially expressed genes in tissues is less likely to result in errors in the form of artifactual false-positive clones than the analysis of cell culture systems. In addition to the fact that existing cell culture systems cannot adequately simulate the complexity of pathological processes in the tissue, the variations in cell behavior in the culture environment lead to nucleic acid and polypeptide expression patterns with questionable relation to the actual pathologic state. These problems may be less pronounced by an approach that utilizes gene expression in normal and diseased human tissue but again multiple variables confound clear identification of differential gene expression that is directly relevant to disease. For example, differentially expressed nucleic acids may result from inter-individual differences, metabolic state and/or clinical treatment paradigm. Further, large scale gene expression studies using cDNA microarrays do not indicate the cellular source of variation in gene expression. In addition, a differential gene expression study including all or most genes produces a very large volume of data that confounds identification of key disease-associated gene expression changes. Consequently, an approach that includes large scale profiling of gene expression from tissue from liver disorders that are defined only generally (as for example, "liver tumors") is unlikely to illuminate key genes involved in the disease process and it is these key genes that represent best targets for diagnostics and therapeutic intervention.

[059] On account of these difficulties, the success of the screening is significantly dependent on the choice of the experimental parameters. While the methods used are based on established procedures, the screening and verification strategy is already inventive *per se* owing to the elaborate and defined choice of parameters. A unique

approach employed in this invention utilizes discrete, pathologist-confirmed liver cancer pathologies for production of disease specific cDNA libraries enriched in nucleic acids specifically up- and down-regulated in HCC compared with a pool of non-neoplastic human livers. Non-diseased reference liver samples for the experiments are also diagnostically confirmed and pooled from 3 independent samples to reduce detection of false positives resulting from inter-individual variations. Nucleic acids commonly expressed at similar levels in the reference liver pool and in diseased liver (i.e., HCC) are removed by the generation of subtractive suppressive hybridization (SSH) cDNA libraries (Diatchenko et al., 1996, Proc. Natl. Acad. Sci. USA, 93:6025-6030). These cDNAs are highly enriched for nucleic acids both up- and down-regulated in HCC but do not represent those that are not differentially expressed. Each of several thousand SSH clones were amplified by the polymerase chain reaction (PCR) and affixed to glass slides in custom cDNA microarrays. RNA from additional pathologist-confirmed liver disorders is converted to fluorescently-labeled cDNA for competitive hybridization with the pooled non-diseased liver RNA on the microarrays. The resulting ratio of hybridization intensity reveals nucleic acids specifically deregulated in liver disorders. In addition to providing a pool of candidate cDNAs highly enriched for differentially expressed genes, the SSH library represents on a genome-wide scale most if not all differentially expressed genes with far fewer clones than in standard cDNA libraries. This feature thereby focuses on nucleic acids specifically deregulated in disease. The SSH libraries generated in this invention include cDNA clones from nucleic acids that are essentially not expressed in normal liver and thereby not represented in conventional cDNA libraries or on genome-scale cDNA microarrays.

[060] Overexpression of the sequences according to the invention in liver disorder tissue compared to normal liver is confirmed by independent analysis of RNA levels with sequence-specific quantitative RT-PCR (Q-PCR). In these verification experiments, PCR product corresponding to the cellular RNA levels of the sequences according to the invention are monitored by fluorescent detection of the specific PCR product. The fluorescent signal is provided either by a sequence specific hydrolysis probe oligonucleotide (primer) in the TaqMan/Assay-on-Demand procedure (Figure 100 to 103) or by a fluorescent double stranded DNA binding dye such as SYBR green (Figure 104). Levels of PCR products corresponding to the sequences according to the invention are normalized for experimental variability by comparison with the levels of 'housekeeping' genes including β -actin, which are considered relatively invariant in disease or following experimental manipulations. The reference gene primers used for TaqMan Q-PCR analyses are GAPDH-p1, (SEQ ID 187); GAPDH-p2, (SEQ ID 188); GAPDH-p3, (SEQ ID 189); β Actin-p1, (SEQ ID 190); β Actin-p2, (SEQ ID 191); and

β Actin-p3, (SEQ ID 192). The reference gene primers used for SYBR Green analyses are β Actin-p4, (SEQ ID 193); and β Actin-p5, (SEQ ID 194). The determination of RNA levels relative to these housekeeping genes in Q-PCR experiments is performed according to the method of Pfaffl (Nucleic Acids Research, 2001, 29(9):e45). These techniques are well known to a person skilled in the art.

[061] Furthermore, expression of HCC deregulated genes according to this invention correlates with proliferation of hepatoma cells (Hep3B, HepG2) following for example 8 hours and 12 hours serum stimulation of quiescent cells. This finding supports the suggestion that overexpression of the sequences according to the invention is functionally significant for proliferative liver disorders such as liver cancer.

[062] Compared to the state of the art, these polypeptides and nucleic acids surprisingly allow improved, more sensitive, earlier, faster, and/or non-invasive diagnosis of the liver disorders and/or epithelial cancers. The nucleic acids and polypeptides according to the invention can be utilized for the diagnosis, prevention and treatment of liver disorders, and epithelial cancers.

[063] The present invention relates to at least one polypeptide comprising a sequence according to one of the SEQ ID 1 to SEQ ID 93, or a functional variant thereof. The invention also relates to a nucleic acid coding for the polypeptide or a functional variant thereof.

[064] In preferred embodiment the polypeptide consists of the sequence according to the SEQ ID 1. In another preferred embodiment the nucleic acid consists of the sequence according to the SEQ ID 94.

[065] Compared to the state of the art, these polypeptides and nucleic acids surprisingly allow improved, more sensitive, earlier, faster, and/or non-invasive diagnosis of the liver disorders and/or epithelial cancers.

[066] In another aspect of the invention the invention relates to the use of at least one polypeptide according to the SEQ ID 1 to SEQ ID 93, a functional variant of the polypeptide, a nucleic acid encoding one of the aforementioned polypeptides, a nucleic acid encoding the functional variant, a variant of one of the aforementioned nucleic acids, a nucleic acid which is a non-functional mutant variant of one of the aforementioned nucleic acids, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, a cell comprising one of the aforementioned nucleic acids, a cell comprising the aforementioned vector, an antibody directed against one of the aforementioned polypeptides, an antibody directed against a functional variant of one of the aforementioned polypeptides, a fragment of one of the aforementioned antibodies, a vector comprising a nucleic acid coding for one of the aforementioned antibodies, a vector comprising a nucleic acid coding for one of the aforementioned antibody fragments, a

cell comprising the vector comprising a nucleic acid coding for one of the aforementioned antibodies, and/or at least one cell comprising the vector comprising a nucleic acid coding for one of the aforementioned antibody fragments, for the diagnosis, prevention and/or treatment of disorders according to the invention. Further embodiments of the invention are described in detail below.

[067] When compared to the state of the art of therapy of liver disorders, and/or epithelial cancers the use of these components surprisingly provide an improved, sustained and/or more effective diagnosis, prevention and/or treatment of disorders according to the invention.

[068] The term "polypeptide" refers to the full length of the polypeptide according to the invention. In a preferred embodiment the term "polypeptide" also includes isolated polypeptides and polypeptides that are prepared by recombinant methods, e.g. by isolation and purification from a sample, by screening a library and by protein synthesis by conventional methods, all of these methods being generally known to the person skilled in the art. Preferably, the entire polypeptide or parts thereof can be synthesized, for example, with the aid of the conventional synthesis such as the Merrifield technique. In another preferred embodiment, parts of the polypeptides according to the invention can be utilized to obtain antisera or specific monoclonal antibodies, which may be used to screen suitable gene libraries prepared to express the encoded protein sequences in order to identify further functional variants of the polypeptides according to the invention.

[069] The term "polypeptide according to the invention" refers to the polypeptides according to the SEQ ID 1 to SEQ ID 93 (Table 2A to 2D).

[070] The term "functional variants" of a polypeptide within the meaning of the present invention refers to polypeptides which have a sequence homology, in particular a sequence identity, of about 70%, preferably about 80%, in particular about 90%, especially about 95%, most preferred of 98 % with the polypeptide having the amino acid sequence according to one of the SEQ ID 1 to SEQ ID 93. Such functional variants are, for example, the polypeptides homologous to a polypeptide according to the invention, which originate from organisms other than human, preferably from non-human mammals such as, for example mouse, rats, monkeys and pigs. Other examples of functional variants are polypeptides that are encoded by different alleles of the gene, in different individuals, in different organs of an organism or in different developmental phases.

[071] Functional variants, for example, also include polypeptides that are encoded by a nucleic acid which is isolated from non-liver-tissue, e.g. embryonic tissue, but after expression in a cell involved in liver disorders have the designated functions. Functional variants preferably also include naturally occurring or synthetic mutations,

particularly mutations that quantitatively alter the activity of the peptides encoded by these sequences. Further, such variants may preferably arise from differential splicing of the encoding gene.

[072] "Functional variants" refer to polypeptides that have essentially the same biological function(s) as the corresponding polypeptide according to the invention. Such biological function can be assayed in a functional assay.

[073] In order to test whether a candidate polypeptide is a functional variant of a polypeptide according to the invention, the candidate polypeptide can be analyzed in a functional assay generally known to the person skilled in the art, which assay is suitable to assay the biological function of the corresponding polypeptide according to the invention. Such functional assay comprise for example cell culture systems; enzymatic assays, the generation of mice in which the genes are deleted ("knocked out") or mice that are transgenic for gene encoding the candidate polypeptide, etc. If the candidate polypeptide demonstrates or directly interferes with essentially the same biological function as the corresponding polypeptide according to the invention, the candidate polypeptide is a functional variant of the corresponding polypeptide, provided that the candidate polypeptide fulfills the requirements on the level of % sequence identity mentioned above.

[074] Furthermore, the term "functional variant" encompasses polypeptides that are preferably differentially expressed in patients suffering from liver disorders, or other epithelial cancers relative to a reference sample or a reference library, including polypeptides expressed from mutated genes or from genes differentially spliced, provided that the candidate functional variant polypeptide fulfills the criteria of a functional variant on the level of % sequence identity. Such expression analysis can be carried out by methods generally known to the person skilled in the art.

[075] "Functional variants" of the polypeptide can also be parts of the polypeptide according to the invention with a length of at least from about 7 to about 1000 amino acids, preferably of at least 10 amino acids, more preferably at least 20, most preferred at least 50, for example at least 100, for example at least 200, for example at least 300, for example at least 400, for example at least 500, for example at least 600 amino acids provided that they have essentially the same biological function(s) as the corresponding polypeptide according to the invention. Functional variants, such as in fusion proteins, may contain either on one or both ends additional amino acid stretch(es), preferably 1 to 50 amino acids, more preferably 20 amino acids. Also included are deletions of the polypeptides according to the invention, in the range from about 1-30, preferably from about 1-15, in particular from about 1-5 amino acids provided that they have essentially the same biological function(s) as the corresponding polypeptide according to the invention. For example, the first amino acid

methionine can be absent without the function of the polypeptide being significantly altered. Also, post-translational modifications, for example lipid anchors or phosphoryl groups may be present or absent in variants.

- [076] "Sequence identity" refers to the degree of identity (% identity) of two sequences, that in the case of polypeptides can be determined by means of for example BLASTP 2.0.1 and in the case of nucleic acids by means of for example BLASTN 2.0.14, wherein the Filter is set off and BLOSUM is 62 (Altschul et al., 1997, Nucleic Acids Res., 25:3389-3402).
- [077] "Sequence homology" refers to the similarity (% positives) of two polypeptide sequences determined by means of for example BLASTP 2.0.1 wherein the Filter is set off and BLOSUM is 62 (Altschul et al., 1997, Nucleic Acids Res., 25:3389-3402).
- [078] The term "liver disorder" refers to and comprises all kinds of disorders that preferably affect the anatomy, physiology, metabolic, and/or genetic activities of the liver, that preferably affect the generation of new liver cells, and/or the regeneration of the liver, as a whole or parts thereof preferably transiently, temporarily, chronically or permanently in a pathological way. Preferably also included are inherited liver disorders and neoplastic liver disorders. Liver disorder is further understood to preferably comprise liver disorders caused by trauma, intoxication, in particular by alcohol, drugs or food intoxication, radiation, infection, cholestasis, immune reactions, and by inherited metabolic liver diseases. Preferred examples of liver disorders include cirrhosis, alcoholic liver disease, chronic hepatitis, Wilson's Disease, and haemochromatosis. Preferably further included are autoimmune-disorders wherein the autoimmune response is directed against at least one polypeptide according to the invention. Within the meaning of the present invention the term "liver disorder" preferably also encompasses liver cancer, for example hepatocellular carcinoma (HCC), benign liver neoplasms such as adenoma and/or FNH. Preferably HCC further comprises subtypes of the mentioned disorders, preferably including liver cancers characterized by intracellular proteinaceous inclusion bodies, HCCs characterized by hepatocyte steatosis, and fibrolamellar HCC. For example, precancerous lesions are preferably also included such as those characterized by increased hepatocyte cell size (the "large cell" change), and those characterized by decreased hepatocyte cell size (the "small cell" change) as well as macro regenerative (hyperplastic) nodules (Anthony, P. in MacSween et al, eds. Pathology of the Liver, 2001, Churchill Livingstone, Edinburgh).
- [079] The term "epithelial cancer" within the meaning of the invention includes adenocarcinomas of any organ other than the liver, preferably of the lung, stomach, kidney, colon, prostate, skin and breast, and refers to disorders of these organs in which epithelial cell components of the tissue are transformed resulting in a malignant tumor

identified according to the standard diagnostic procedures as generally known to a person skilled in the art.

[080] Within the meaning of the invention the term "disorder according to the invention" encompasses epithelial cancer and liver disorders as defined above.

[081] In the case of polypeptides, the term "differential expression of a polypeptide" refers to the relative level of expression of the polypeptide in an isolated sample from a patient compared to the expression of the polypeptide in a reference sample or a reference library. The expression can be determined by methods generally known to the person skilled in the art. Examples of such methods include immunohistochemical or immunoblot or ELISA detection of the polypeptide with antibodies specific for the polypeptide. Detection of the polypeptide through genetic manipulation to label the polypeptide and detection in a model system is preferably also included such as by tagging the polypeptide in a transgene for expression in a model system.

[082] The term "sample" refers to a biomaterial comprising liver tissue or liver cells, also tissue from another organ subject to malignant transformation or a cell from this organ, blood, serum, plasma, ascitic fluid, pleural effusions, cerebral spinal fluid, saliva, urine, semen or feces.

[083] The sample can be isolated from a patient or another subject by means of methods including invasive or non-invasive methods. Invasive methods are generally known to the skilled artisan and comprise for example isolation of the sample by means of puncturing, surgical removal of the sample from the opened body or by means of endoscopic instruments. Minimally invasive and non-invasive methods are also known to the person skilled in the art and include for example, collecting body fluids such as blood, serum, plasma, ascitic, pleural and cerebral spinal fluid, saliva, urine, semen, and feces. Preferably the non-invasive methods do not require penetrating or opening the body of a patient or subject through openings other than the body openings naturally present such as the mouth, ear, nose, rectum, urethra, and open wounds.

[084] The term "minimally invasive" procedure refers to methods generally known, especially by persons skilled in the art, for obtaining patient sample material that do preferably not require anesthesia, can be routinely accomplished in a physician office or clinic and are either not painful or only nominally painful. The most common example of a minimally invasive procedure is venupuncture.

[085] The term "reference sample" refers to a sample that serves as an appropriate control to evaluate the differential expression of a nucleic acid and/or a polypeptide according to the invention in a given sample isolated from a patient; the choice of such appropriate reference sample is generally known to the person skilled in the art. Examples of reference samples include samples isolated from a non-diseased organ or tissue or cell(s) of the same patient or from another subject, wherein the non-diseased

organ or tissue or cell(s) is selected from the group consisting of liver tissue or liver cells, blood, or the samples described above. For comparison to expression in the sample isolated from a patient with the liver disorder, the reference sample may also include a sample isolated from a non-diseased organ or tissue or cell(s) of a different patient, wherein the liver disordered- tissue or cell(s) is selected from the sample group listed above. Moreover the reference may include samples from healthy donors, preferably matched to the age and sex of the patient.

[086] The term "reference library" refers to a library of clones representing expressed genes, which library is preferably prepared from non-diseased liver tissue or cells. The reference library may also derive from mRNA from non-diseased liver tissue or cells and may also comprise a data base comprising data on non-diseased tissue expression of nucleic acids. For comparison of the expression of the nucleic acids or polypeptides according to the invention in a sample isolated from a patient with the disordered liver, the reference library may comprise an expression library prepared from liver disorder-diseased liver tissue or cells and a data base comprising data on liver disorder-specific expression of nucleic acids.

[087] The term "patient" within the meaning of the invention includes animals, preferably mammals, and humans, dead or alive. The patient is either suffering from a liver disorder, and/or other epithelial cancer, subject to analysis, preventive measures, therapy and/or diagnosis in the context of liver disorder and/or other epithelial cancer.

[088] The term "subject" within the meaning of the invention includes animals, preferably mammals, and humans, dead or alive that is not suffering from a liver disorders and/or other epithelial cancer and thus represent a preferred appropriate control for the determination of differential expression of nucleic acids and/or polypeptides according to the invention in a patient.

[089] The term "effective treatment" within the meaning of the invention refers to a treatment that preferably cures the patient from at least one disorder according to the invention and/or that improves the pathological condition of the patient with respect to at least one symptom associated with the disorder, preferably 3 symptoms, more preferably 5 symptoms, most preferably 10 symptoms associated with the disorder; preferably on a transient, short-term (in the order of hours to days), long-term (in the order of weeks, months or years) or permanent basis, wherein the improvement of the pathological condition may be preferably constant, increasing, decreasing, continuously changing or oscillatory in magnitude as long as the overall effect is a significant improvement of the symptoms compared with a control patient. Therapeutic efficacy and toxicity, e.g. ED₅₀ and LD₅₀ may be determined by standard pharmacological procedures in cell cultures or experimental animals. The dose ratio between therapeutic and toxic effects is the therapeutic index and may be expressed by the ratio

LD₅₀/ED₅₀. Pharmaceutical compositions that exhibit large therapeutic indexes are preferred. The dose must be adjusted to the age, weight and condition of the individual patient to be treated, as well as the route of administration, dosage form and regimen, and the result desired, and the exact dosage should of course be determined by the practitioner.

- [090] The actual dosage depends on the nature and severity of the disorder being treated, and is within the discretion of the physician, and may be varied by titration of the dosage to the particular circumstances of this invention to produce the desired therapeutic effect. However, it is presently contemplated, that pharmaceutical compositions comprising of from about 0.1 to 500 mg of the active ingredient per individual dose, preferably of from about 1 to 100 mg, most preferred from about 1 to 10 mg, are suitable for therapeutic treatments.
- [091] The active ingredient may be administered in one or several dosages per day. A satisfactory result can, in certain instances, be obtained at a dosage as low as 0.1 mg/kg intravenously (i.v.) and 1 mg perorally (p.o.). Preferred ranges are from 0.1 mg/kg/day to about 10 mg/kg /day i.v. and from 1 mg/kg/day to about 100 mg/kg/day p.o.
- [092] In another aspect the invention relates to a fusion protein comprising a polypeptide according to the SEQ ID 1 to 93, or a functional variant thereof.
- [093] A "fusion protein" refers to a polypeptide comprising at least one polypeptide according to the SEQ ID 1 to SEQ ID 93, a functional variant or part thereof and at least one component A selected from polypeptide, peptide and/or peptide analogue that is linked to the polypeptide according to the invention by means of covalent or non-covalent binding such as e.g. hydrogen bonds, generally known to the person skilled in the art. Preferred examples of component A for fusion proteins are polypeptide, peptide and/or peptide analogues that facilitate easier detection of the fusion proteins; these are, for example, "green-fluorescent-protein", or variants thereof. Also included are fusion proteins that facilitate purification of the recombinant protein such as "His-tags", or fusions that increase the immunogenicity of the protein.
- [094] Fusion proteins according to the invention can be produced by methods generally known to the person skilled in the art. The fusion proteins according to the invention can be used for the diagnosis, prevention and or treatment of liver disorders and/or epithelial cancer.
- [095] Compared to the state of the art, these fusion proteins surprisingly allow improved, more sensitive, earlier, faster, and/or non-invasive diagnosis and/or improved, sustained and/or more effective treatment of the liver disorders and/or epithelial cancers.
- [096] Preferred nucleic acids according to the invention comprise a sequence according to one of SEQ ID 94 to SEQ ID 186, or a variant thereof. In particular the invention

relates to nucleic acids according to the invention that have been isolated.

[097] Compared to the state of the art, these nucleic acids and polypeptides surprisingly allow improved, more sensitive, earlier, faster, and/or non-invasive diagnosis and/or improved, sustained and/or more effective treatment of the liver disorders and/or epithelial cancers.

[098] The term "nucleic acid according to the invention" refers to the nucleic acids corresponding to the SEQ ID 94 to SEQ ID 186 and/or variants thereof.

[099] The term "encoding nucleic acid" relates to a DNA sequence that codes for an isolatable bioactive polypeptide according to the invention or a precursor thereof. The polypeptide can be encoded by a sequence of full length or any part of the coding sequence as long as the biological function, such as for example receptor-activity, is essentially retained (cf. definition of functional variant).

[100] It is known that small alterations in the sequence of the nucleic acids described above can be present, for example, due to the degeneration of the genetic code, or that untranslated sequences can be attached to the 5' and/or 3' end of the nucleic acid without significantly affecting the activity of the encoded polypeptide. This invention, therefore, also comprises so-called naturally occurring and artificially generated "variants" of the nucleic acids described above.

[101] Preferably, the nucleic acids used according to the invention are DNA or RNA, preferably a DNA, in particular a double-stranded DNA. In particular the nucleic acid according to the invention may be an RNA molecule, preferably single-stranded or a double-stranded RNA molecule. The sequence of the nucleic acids may further comprise at least one intron and/or one polyA sequence.

[102] Nucleic acids according to the invention can be produced by methods generally known to the skilled artisan and have also been described in detail below.

[103] "Variant" within the meaning of the invention refers to all DNA sequences that are complementary to a DNA sequence, which hybridize with the reference sequence under stringent conditions and have a similar activity to the corresponding nucleic acid according to the invention. The nucleic acids according to the invention can also be used in the form of their antisense sequence.

[104] "Variant" of the nucleic acids can also be homologues from other species with sequence identity preferably 80%, in particular 90%, most preferred 95%.

[105] "Variant" of the nucleic acids can also be parts of the nucleic acid according to the present invention with at least about 8 nucleotides length, preferably with at least about 16 nucleotides length, in particular with at least about 21 nucleotides length, more preferably with at least about 30 nucleotides length, even more preferably with at least about 40 nucleotides length, most preferably with at least about 50 nucleotides length as long as the parts have a similar activity to the corresponding polypeptide according

to the invention. Such a functional activity of an expressed polypeptide encoded by such a nucleic acid can be assayed using the functional assays described further above.

[106] In a preferred embodiment of the invention the nucleic acid comprises a nucleic acid having a sequence complementary to a nucleic acid according to the invention, or a variant thereof. Preferably the nucleic acid comprises a non-functional mutant variant of the nucleic acid according to the invention, or a variant thereof.

[107] In particular the invention relates to a nucleic acid having a complementary sequence wherein the nucleic acid is an antisense molecule or an RNA interference molecule.

[108] The term "non-functional mutant variant of a nucleic acid" refers to a nucleic acid derived from a nucleic acid according to the invention, or a variant thereof having been mutated such that the polypeptide encoded by the non-functional mutant variant of the nucleic acid exhibits a biological activity which in comparison the non-mutated polypeptide is significantly decreased or abolished. Such activity of the polypeptide encoded by the non-functional mutant variant nucleic acid can be determined by means of a functional assay as described above for the evaluation of functional variants. The construction and screening of such non-functional mutant variant derived from a nucleic acid according to the invention are generally known to the person skilled in the art. Such "non-functional mutant variant of a nucleic acid" according to the invention can be expressed in a patient and will preferably abolish or diminish the level of expression of the targeted nucleic acid by competing with the native mRNA molecules for translation into polypeptides by the ribosomes.

[109] "Stringent hybridization conditions" refer to those conditions in which hybridization takes place at 60°C in 2.5 xSSC buffer and remains stable following a number of washing steps at 37°C in a buffer of lower salt concentration.

[110] The term "differential expression of a nucleic acid" refers to the relative level of expression of the nucleic acid in an isolated sample from a patient compared to the expression of the nucleic acid in a reference sample or a reference library. Definitions of reference samples and reference libraries have been described in detail above. The expression can be determined by methods generally known to the person skilled in the art. Examples of such methods include RNA blot (northern) analysis, nuclease protection, in situ hybridization, reverse transcriptase PCR (RT-PCR; including quantitative kinetic RT-PCR). cDNA and oligonucleotide microarrays are also included as such methods.

[111]

[112] Preferred embodiment of the invention relates to the HCC up-regulated phosphatidylinositol 4-kinase type II (PI4K2) polypeptide (Accession. No. NP_060895, SEQ ID 1) and to the nucleic acid PI4K2 (Accession. No. NM_018425, SEQ ID 94)

coding for the polypeptide. The prevalent phosphatidylinositol (PtdIns) phosphate kinase activity in many mammalian cell types is conferred by the widespread type 2 kinase (PI4K2). The human type 2 isoform has been partially purified from plasma membrane rafts of human A431 epidermoid carcinoma cells. (Minogue S. et al., 2001. *J Biol Chem.*, 18; 276(20):16635-40. Epub 2001 Feb 13). The predicted amino acid sequence revealed two isoforms: 2alpha and 2beta. The type 2alpha mRNA appears to be expressed ubiquitously in human tissues, and homologues appear to be expressed in all eukaryotes, but the gene encoding this PtdIns family member, however, has not previously been reported to be expressed at elevated levels in disorders according to the invention, in particular in HCC.

- [113] Expression of this mRNA is elevated on average almost 2-fold relative to non-diseased liver in 46% of the HCC cases profiled (see Figure 1, Table 3A). Elevated expression of the encoding mRNA is also evident in FNH (to even a higher extent than in HCC; Figure 9/Table 4A), but not in cirrhotic livers subjected to this cDNA microarray expression profiling procedure (Figure 9 and Table 3A). For this and the other nucleic acids according to the invention, this value for expression includes the expression value ratio data from all of the (28) HCC samples subjected to the cDNA microarray expression profiling experiments, including the values from samples that are not elevated by 2-fold or greater.
- [114] These results should confirm that the differential upregulated expression of the PI4K2 cDNA sequence is highly specific for disorders according to the invention. Therefore the PI4K2 polypeptide and/or the encoding nucleic acid can be utilized for the diagnosis, prevention and treatment of disorders according to the invention
- [115] In another preferred embodiment the nucleic according to the invention is the Zinc finger protein 216, ZNF216 cDNA (SEQ ID 95) which includes the open reading frame encoding ZNF216 polypeptide (SEQ ID 2). The ZNF216 polypeptide (GenBank sequence NP_005998) is another embodiment of the invention. The ZNF216 gene is identical to the already reported cochlear-expressed gene (Scott DA. et al., 1998, *Gene*, 215(2): 461- 469) that maps to the DFNB7/11 interval for autosomal recessive non-syndromic hearing loss (ARNSHL) located on human chromosome 9q13-q21. Although ZNF216 gene is highly conserved between human and mouse, containing two regions that show homology to the putative zinc finger domains of other proteins, the polypeptide sequence has unknown function. Based on homology to bovine cDNA tag A2, ZNF216 may play a role in development of vessel endothelium from precursor cells suggesting a potential regulatory role in neovascularization. In this line it was recently suggested that ZNF216 and its A20-like zinc finger domain (ZnF-A20) have redundant and distinct role in regulating NF-kappaB activation and apoptosis (Huang J, published online ahead of print January 30, 2004, *J. Biol. Chem.*,

10.1074/jbc.M309491200). The gene encoding this zinc finger family member, however, has not previously been reported to be expressed at elevated levels in disorders according to the invention, in particular in HCC.

- [116] The expression in HCC of RNA corresponding to assembled sequence SEQ ID 95 is confirmed experimentally. The initial sequence upregulated in HCC relative to non-diseased liver identified as an SSH cDNA clone corresponds to GenBank sequence NM_006007. The expression of sequences of this clone has not previously been reported in liver or in HCC.
- [117] In a preferred embodiment the polypeptide according to the invention is the ZNF216 polypeptide (SEQ ID 2) which is surprisingly identified from an mRNA identified to be upregulated in HCC by an average of 16-fold relative to non-diseased liver (Figure 1) in 54% of the profiled cases (Table 3A). Similarly, elevated expression of the encoding mRNA relative to non-diseased liver is also evident in FNH but not in cirrhotic livers (see Figure 10, Tables 4A/5A).
- [118] cDNA sequences encoding this polypeptide and overlapping with this mRNA might be identified with reverse transcriptase PCR analysis and these nucleic acids can be similarly elevated in HCC. Furthermore, high expression specificity of the ZNF216 cDNA can be confirmed by quantitative assessment (Q-PCR) in HCC, FNH and Cirrhosis in comparison to expression pattern in normal tissue(s). The TaqMan procedure utilizing the parallel examination of both GAPDH and β -actin as reference genes should verify a large over expression of ZNF216 cDNA (SEQ ID 95) in HCC when compared to FNH and Cirrhosis. For TaqMan analyses ZNF 216 expression might be determined with gene specific oligonucleotide primers including ZNF216-p1, 5'-gagaggacaaaataactacc-3', SEQ ID 195 (from nucleotide 611- 631 of SEQ ID 95 forward strand), ZNF216-p2, 5'-caattcaggagctttttctca-3', SEQ ID 196 (from nucleotide 726-705 of SEQ ID 95 reverse strand) and the "hydrolysis" probe ZNF216-pr, 5'-tactgggctgagaaactgatggactgggctga-3' SEQ ID 198 (from nucleotide 694-663 of SEQ ID 95 reverse strand).
- [119] Furthermore, the expression of this HCC-deregulated gene correlates with proliferation of hepatoma cells, showing 2-fold and 3-fold increase of ZNF216 mRNA in Hep3B cell line upon 8 hours and 12 hours serum stimulation of quiescent cells, respectively (see Figure 106).
- [120] These results demonstrate that ZNF216 polypeptide (SEQ ID 2) and the nucleic acid encoding the polypeptide (SEQ ID 95) can be employed in the prevention and therapy of disorders according to the invention, in particular for the treatment of hyperplastic (including neoplastic) liver diseases. With regard to the treatment it is preferred to carry out the treatment such that the expression of the ZNF216 polypeptide or of the nucleic acid encoding the polypeptide is reduced and/or inhibited,

for example by administering antisense oligonucleotides or RNA interference molecules that specifically interact with the nucleic acid encoding the ZNF216 polypeptide. Alternatively the treatment may be carried out such that the activity of the ZNF216 polypeptide is reduced and/or inhibited, for example by administering an antibody directed against the ZNF216 polypeptide or an antibody fragment thereof which block the activity of the ZNF216 polypeptide to a patient in need of such treatment. Compared to the state of the art, this ZNF216 polypeptide and/or ZNF216 nucleic acid surprisingly allow improved, more sensitive, earlier, faster, and/or non-invasive diagnosis and/or improved, sustained and/or more effective.

[121] In another preferred embodiment the nucleic acid according to the invention is the AKR1C1 nucleic acid (SEQ ID 96) that represents the sequence of an HCC deregulated cDNA clone. This gene encodes the Aldo-keto reductase family 1 member C1 sharing high sequence identity with three other gene members and is localized at chromosome 10p15-p14 (Stolz, A. et al, 1993, J. Biol. Chem., 268: 10448-10457). These enzymes catalyze the conversion of aldehydes and ketones to their corresponding alcohols by utilizing NADH and/or NADPH as cofactors. The enzymes display overlapping but distinct substrate specificity and may assist in the rapid intracellular transport of bile acids from the sinusoidal to the canalicular pole of the cell, and thereby having a role in monitoring the intrahepatic bile acid concentration. The AKR1C1 regulates progesterone action by converting the hormone into its inactive metabolite 20 alpha-hydroxyprogesterone, and toxicologically this enzyme activates polycyclic aromatic hydrocarbon trans-dihydrodiols to redox-cycling o-quinones. However, the significance of its potent induction by Michael acceptors and oxidative stress is unknown (Burczynski ME. et al., J Biol Chem., 2001, 276(4): 2890- 2897). Expression of sequences corresponding to this clone has been already reported in several tissues (including liver) and some tumors (including prostate, breast; e.g., Wiebe JP and Lewis MJ., 2003, BMC Cancer, 3(1): 9) but the sequence has not previously been described to be upregulated in HCC.

[122] In liver samples from HCC patients expression of the mRNA encoding this polypeptide is surprisingly elevated relative to non-diseased liver by an average value of 7-fold in 79% cases profiled (Figure 1, Table 3A). Elevated expression of the encoding mRNA relative to non-diseased liver is also evident in FNH but not in cirrhotic livers (Figure 11, Table 4A/5A).

[123] Independent RT-PCR analysis of expression levels of AKR1C1 mRNA in HCC relative to normal liver are determined with gene specific oligonucleotide primers including: AKR1C1-p1, 5'- ttgaaaggtcactgaaaaatct-3' (SEQ ID 199) and AKR1C1-p2, 5'-gctggctgcggttgaagtgg-3' (SEQ ID 200) verifying the specific expression of this gene (SEQ ID 96) in HCCs when compared to normal liver samples (Figure 104).

- [124] Furthermore, the expression of this HCC-deregulated mRNA is showing 2-fold and 5-fold increase by serum stimulation of quiescent hepatoma cells (HepG2) upon 8 hours and 12 hours, respectively (Figure 107).
- [125] The target gene encoded polypeptide enzymatic activity clearly shows the correlation between the upregulation of AKR1C1 gene transcript in HCC with the approximately 2-fold induction of the AKR1C1 enzymatic activity suggesting that elevated expression of this sequence is correlated with human liver tumor cell proliferation (Table 9).
- [126] In yet another preferred embodiment the nucleic acid according to the invention is the dUTP pyrophosphatase, dUT nucleic acid (SEQ ID 97) which has been disclosed before (Accession. No NM_001948) encoding the dUT polypeptide (Accession. No NP_001939, SEQ ID 4). dUTP pyrophosphatase involved in nucleotide metabolism produces dUMP (through hydrolysis of dUTP), the immediate precursor of thymidine nucleotides and decreases the intracellular concentration of dUTP so that uracil cannot be incorporated into DNA (McIntosh E.M. et al., 1992; PNAS, 89: 8020-8024). Nuclear DUT- DUT-N (18 kDa) and mitochondrial DUT-M (23 kDa) isoforms of the protein have been identified in humans and arise from the same gene by the alternative use of 5' exons. DUT-N protein and mRNA levels are tightly regulated to coincide with DNA replication. DUT-N is phosphorylated by cyclin-dependent kinases (Ladner R.D., 1996, J. Biol. Chem., 271: 7745-7751). Recently, it has been shown that these isoforms are aberrantly expressed in some cancers (Pugacheva E.N. et al., 2002, Oncogene, 21(30): 4595- 4600) but the gene encoding these isoforms has not previously been reported to be expressed at elevated levels in HCC.
- [127] Expression of the mRNA encoding the dUT polypeptide is induced by an average of 7-fold relative to non-diseased liver in 47% of the HCC cases profiled (Figure 1, Table 3A). Similarly, elevated expression of the encoding mRNA is also evident in FNH by an average 10.6-fold induction relative to non-diseased liver in 40% of the FNH cases profiled but not in the cirrhotic livers (Figure 12, Tables 4A/5A).
- [128] Independent RT-PCR analyses of expression levels of dUT mRNA might be determined with gene specific oligonucleotide primers including primers for TaqMan analysis, for example: dUT-p1: 5'-ccgctgggctacgacctg-3', SEQ ID 201 (from nucleotide 153-169 of the SEQ ID 97 forward strand), dUT-p2, 5'-agccactcttcataacacc-3', SEQ ID 202 (from nucleotide 268-249 of the SEQ ID 97 reverse strand) and fluorescently-labeled probe dUT-pr, 5'-tgtccgttttcacaacagctttctcataggt-3', SEQ ID 203 (spanning bases from 227-197 of the SEQ ID 97 reverse strand).
- [129] Furthermore, a specific high-affinity inhibitor blocks proliferation of hepatoma cells (Hep3B/HepG2); the specific small molecule inhibitor (DMT-dU (5'-O-(4,4'-Dimethoxytrityl)-2'-deoxyuridine; Sigma; No. D7279) (Persson, T. et al.,

1996, Bioorg. Med. Chem., 4: 553-556) stimulates a cytostatic and anti-proliferative response (Figures 108 to 109) in these cells.

- [130] These results should confirm that the differential upregulated expression of the dUT cDNA sequence is highly specific for disorders according to the invention. Therefore the dUT polypeptide and/or the encoding nucleic acid can be utilized for the diagnosis, prevention and treatment of disorders according to the invention.
- [131] Another preferred embodiment of the invention relates to the HCC up-regulated Paired basic amino acid cleaving enzyme 4, PACE4 polypeptide (Accession. No. NP_002561, SEQ ID 5) and to the nucleic acid PACE4 (Accession. No. NM_002570, SEQ ID 98) coding for the polypeptide. The protein encoded by this gene belongs to the subtilisin/kexin-like proprotein convertase family while representing a calcium-dependent serine endoprotease that can efficiently cleave precursor proteins at their paired basic amino acid processing sites [consensus site: RX(K/R)R]. Expression of this gene has been already reported in several tissues (including liver) and suggested to play a role in tumor progression (in colon cancer, e.g. Khatib AM. et al., J Biol Chem., 2001, 276(33):30686-30693), but the sequence has not previously been described to be upregulated in HCC.
- [132] Expression of this mRNA is elevated on average by 24-fold relative to non-diseased liver in 57% of the HCC cases profiled (see Figure 1, Table 3A). Elevated expression of the encoding mRNA is also evident in FNH (to a lesser extent than in HCC; Figure 13/Table 4A), but not in cirrhotic livers subjected to this cDNA microarray expression profiling procedure (Figure 13 and Table 5A).
- [133] Taqman RT-PCR analyses of expression levels of PACE4 mRNA (Assay ID Catalogue Number: Hs00159844_m1, Applied Biosystems, USA, see Table 6) verify and confirm the specific elevation of the PACE4 cDNA (Figure 3A) showing up-regulation in 7/17 HCCs, 3/3 FNHs, in 3/3 Cirrhosis and in 0/3 non-neoplastic livers (NNL).
- [134] Furthermore, the expression of this HCC-deregulated mRNA is showing 2.4-fold and 6.7-fold increase by serum stimulation of quiescent hepatoma cells (HepG2) upon 8 hours and 12 hours, respectively (Figure 107).
- [135] These findings suggest a functionally significant role for PACE4 in disorders according to the invention, especially in HCC. Therefore the PACE4 polypeptide and/or the encoding nucleic acid can be utilized for the diagnosis, prevention and treatment of disorders according to the invention.
- [136] In another preferred embodiment invention relates to the HCC up-regulated Transforming growth factor Beta-induced I, BIGH3 polypeptide (Accession number NP_000349; SEQ ID 6) and to the nucleic acid BIGH3 (Accession number NM_000358; SEQ ID 99) coding for the polypeptide. cDNA corresponding to this

mRNA has been identified in cDNA libraries expressed in many tissues but at low levels; and highly expressed in the corneal epithelium. This gene known to be induced by TGF-beta binds specifically to collagens and may regulate cell adhesion (Skonier J. et al., 1994, DNA Cell Biol., 6: 571- 584). BIGH3 gene has been shown to be up-regulated in oesophageal adenocarcinoma tissue (Hourihan RN. et al., 2003, Anticancer Res., 23(1A):161-5), but the sequence has not previously been reported to be up-regulated in disorders according to the invention, in particular in HCC.

- [137] Expression of this mRNA is elevated on average by 5-fold relative to non-diseased liver in 79% of the HCC cases profiled (see Figure 1 and Table 3A). Similar analysis reveals elevated expression of this mRNA in 80% of the FNH cases profiled (Figure 14/Table 4A).
- [138] The HCC induction of the BIGH3 gene is then verified by amplification of the sequence from the cDNA with primer pairs specific to BIGH3 nucleic acid (Assay ID Catalogue Number: Hs00154671_m1) in the Assay-On-Demand (Applied Biosystems, USA) quantitative PCR method and also confirming that the BIGH3 mRNA is not deregulated in cirrhosis (Figure 100).
- [139] These findings suggest that the BIGH3 polypeptide and/or a functional variant thereof and/or the encoding nucleic acid and/or a variant thereof can be utilized for the diagnosis, prevention and treatment of disorders according to the invention (in particular for the diagnosis of in HCC and FNH).
- [140] In another preferred embodiment the polypeptide according to the invention is the PRKAR1A polypeptide (Accession number NP_002725; SEQ ID 7) which is surprisingly identified from an mRNA identified to be upregulated in HCC (Accession number NM_002734; SEQ ID 100). PRKAR1A, a critical component of the cAMP signaling pathway represents a type I regulatory alpha subunit of cAMP-dependent protein kinase, suggested as a dominant negative regulator of transcription in somatic cell hybrids (Sandberg, M. et al., 1987, Biochem. Biophys. Res. Commun., 149:939-945). The inactive form of the enzyme is composed of two regulatory chains and two catalytic chains. Activation by cAMP produces two active catalytic monomers and a regulatory dimer that binds four cAMP molecules (Jones, K.W. et al., 1991, Cell, 66:861-872). Structural information of the protein is not yet obtained. PRKAR1A is likely to be expressed in many tissues. However, the sequence has not previously been reported to be up-regulated in disorders according to the invention, in particular in HCC.
- [141] The mRNA encoding this polypeptide is elevated an average of 3-fold relative to non-diseased liver in 39% HCCs profiled (see Figure 1 and Table 3A) and similarly in FNH, but not in cirrhotic livers (Figure 15 and Tables 4A/5A).
- [142] Independent verification analyses of expression levels of PRKAR1A mRNA might

be determined with gene specific oligonucleotide primers including, for example primer pairs specific to PRKAR1A nucleic acid (Assay ID Catalogue Number: Hs0000267597_m1) in the Assay-On-Demand (Applied Biosystems, USA) quantitative PCR method.

- [143] These results suggest that the strongly upregulated expression of the PRKAR1A cDNA sequence is highly specific for disorders according to the invention, especially in HCC and FNH. Therefore the PRKAR1A polypeptide and/or the encoding nucleic acid can be utilized for the diagnosis, prevention and treatment of disorders according to the invention.
- [144] In a further preferred embodiment the invention relates to the s.t. Ocia nucleic acid (Accession number NM_017830; SEQ ID 101) coding for the Ovarian carcinoma immunoreactive antigen, s.t. Ocia polypeptide (Accession number NP_060300; SEQ ID 8) which may be expressed at low levels in many tissues and known to be elevated in ovarian cancer (Luo L.Y. et al., 2001, Biochem Biophys Res Commun., 12; 280(1): 401- 406). The gene encoding this putative tumor antigen, however, has not previously been described in liver cancer and not being reported to be expressed at elevated levels in disorders according to the invention, in particular in HCC.
- [145] The mRNA encoding this polypeptide is elevated an average of 2.4-fold relative to non-diseased liver (NL) in 32% HCCs profiled (Figure 1 and Table 3A). mRNA levels are marginally elevated in FNH relative to non-diseased liver (Figure 16 and Table 4A). This mRNA is otherwise detected only infrequently in normal and cirrhotic livers subjected here to expression profiling.
- [146] Independent RT-PCR analyses of expression levels of s.t.Ocia mRNA are determined with gene specific oligonucleotide primers (Assay ID Catalogue Number: Hs00215197_m1, Applied Biosystems, USA) in the Assay-On-Demand quantitative PCR method confirming that the s.t.Ocia mRNA is not deregulated in cirrhosis (Figure 101/ Table 6).
- [147] These results suggest that the upregulated expression of the s.t.Ocia cDNA sequence is highly specific for disorders according to the invention, especially HCC. Therefore the s.t.Ocia polypeptide and/or the encoding nucleic acid can be utilized for the diagnosis, prevention and treatment of disorders according to the invention, in particular for the diagnosis of HCC and FNH.
- [148] In yet another preferred embodiment the invention relates to the serologically defined colon cancer antigen 28, SDCCAG28 nucleic acid (Accession number NM_006645; SEQ ID 102). The cDNA clones corresponding to the SDCCAG28 mRNA have been identified in many tissues including colon and other cancers (Scanlan, M.J. et al., 1998, Int. J. Cancer, 76:652-658), but neither this mRNA nor the encoded polypeptide have been previously implicated in disorders according to the

invention, in particular in liver disorders or in HCC. The invention further relates to the polypeptide encoding for the SDCCAG28, a predicted polypeptide of 40.5 kDa (SDCCAG28, SEQ ID 9; NP_006636 in the GenBank database). The presence of this polypeptide has not been described in any cell or tissue and its function has not been reported, primary sequence suggests similarity to phosphatidylcholine transfer protein 2 (Lai, C.-H., 2000, *Genome Res.*, 10: 703- 713).

- [149] mRNA encoding this polypeptide is elevated an average 3-fold in 71% of the HCCs examined and similarly by nearly 7-fold in FNH (40% cases), all relative to non-diseased liver (Figures 1 and 17, Tables 3A/ 4A).
- [150] Independent RT-PCR analyses of expression levels of SDCCAG28 mRNA are determined with gene specific oligonucleotide primers (Assay ID Catalogue Number: Hs00246405_m1) as described for the BIGH3 gene, confirming that the SDCCAG28 mRNA is not deregulated in cirrhosis (Figure 3B). The Assay-on-Demand Q-PCR shows upregulation in 8/17 HCCs, 2/3 FNHs, 1/3 Cirrhosis and 0/3 NNL of profiled cases.
- [151] Additionally, expression of this HCC-deregulated gene correlates with proliferation of hepatomacells, showing almost 2-fold and 4- fold increase of SDCCAG28 mRNA in hepatoma cell line (Hep3B) upon 8 hours and 12 hours serum stimulation of quiescent cells, respectively (see Figure 106).
- [152] Furthermore, the protein expression analyses show increase of SDCCAG28 protein signal in HCCs when compared to normal liver (Figure 105). The results support the functional significance of SDCCAG28 for disorders according to the invention, in particular for HCC.
- [153] These data suggest that SDCCAG28 polypeptide and/or the encoding nucleic acid can be utilized for the diagnosis, prevention and treatment of disorders according to the invention.
- [154] In yet another preferred embodiment the nucleic acid according to the invention is the Peroxiredoxin 1 transcript variant 1, PRDX1 nucleic acid (SEQ ID 103) which has been disclosed before (Accession. No. NM_002574) encoding the PRDX1 polypeptide (Accession. No. NP_002565; SEQ ID 10), a member of the peroxiredoxin family of antioxidant enzymes (Prxs) that also control cytokine-induced peroxide levels which mediate signal transduction in mammalian cells. Prxs can be regulated by changes to phosphorylation, redox and possibly oligomerization states (Wood, Z.A., et al., 2003, *Trends Biochem. Sci.*, 28 (1): 32- 40). Three transcript variants encoding the same protein have been identified for this gene. The PRDX1 has been shown to be up-regulated in human breast cancer (Noh DY et al., 2001, *Anticancer Res.*, 21 (3B): 2085- 2090). However, neither PRDX1 nucleic acid nor the PRDX1 polypeptide had been recognized with respect to elevated levels in HCC.

- [155] Expression of the mRNA encoding this polypeptide is elevated an average of 3.6-fold relative to non-diseased liver in 71% HCC cases profiled (Figure 1, Table 3A). Elevated expression of the encoding mRNA is also evident in other liver disorders (FNH, Cirrhosis) (Figure 18 and Tables 4A/5A).
- [156] Independent verification analyses of expression levels of PRDX1 mRNA might be determined with gene specific oligonucleotide primers including, for example primer pairs specific to PRDX1 nucleic acid (Assay ID Catalogue Number: Hs00602020_m1) in the Assay-On-Demand (Applied Biosystems, USA) quantitative PCR method.
- [157] These findings suggest that the PRDX1 polypeptide and/or a functional variant thereof and/or the encoding nucleic acid and/or a variant thereof can be utilized for the diagnosis, prevention and treatment of disorders according to the invention.
- [158] In yet another preferred embodiment the nucleic acid according to the invention is the Transmembrane trafficking protein, TMP21 nucleic acid (SEQ ID 104) which has been disclosed before (Accession. No NM_006827) encoding the TMP21 polypeptide (Accession No. NP_006818, SEQ ID 11). Tmp21 is involved in biosynthetic transport from the endoplasmic reticulum to the Golgi complex (Blum,R., et al., 1996, J. Biol. Chem. 271, 17183- 17189). There are two known Tmp21 isoforms -I and -II, wherein hum-Tmp21-II is transcribed, but not translated (Horer J et al., 1999, DNA Seq., 10(2): 121-6). Recent data report that phorbol esters translocate beta2-chimaerin (member of "non-protein kinase C" (PKC) phorbol ester/diacylglycerol receptors family) to the perinuclear region and promote its association with Tmp21-I in a PKC-independent manner (Wang H and Kazanietz MG, J Biol Chem, 2002; 277(6): 4541- 4550). Thus, Tmp21-I might be serving as an anchoring protein that determines the intracellular localization of these novel phorbol ester receptors. The gene encoding both isoforms has not previously been reported to be expressed at elevated levels in disorders according to the invention, in particular in HCC.
- [159] Expression of the mRNA encoding the TMP21 polypeptide is induced by an average of 8.5-fold relative to non-diseased liver in 26% of the HCC cases profiled (Figure 1, Table 3A). Similarly, elevated expression of the encoding mRNA is also evident in FNH but not in the cirrhotic livers (see Figure 19 and Tables 4A/5A).
- [160] Furthermore, the expression of this HCC-deregulated mRNA is showing 2.6-fold and 3.5-fold increase by serum stimulation of quiescent hepatoma cells (HepG2) upon 8 hours and 12 hours, respectively (Figure 107).
- [161] These results show that the differential upregulated expression of the TMP21 cDNA sequence is highly specific for disorders according to the invention. Therefore the TMP21 polypeptide and/or the encoding nucleic acid can be utilized for the diagnosis, prevention and treatment of disorders according to the invention
- [162] In yet another preferred embodiment the nucleic acid according to the invention is

the IQ motif containing GTPase-activating protein 2, IQGAP2 nucleic acid (SEQ ID 105) which has been disclosed before (Accession No. NM_006633) encoding the IQGAP2 polypeptide (Accession No. NP_006624, SEQ ID 12). This liver specific protein has been reported to harbor a potential actin binding domain and to interact with calmodulin and Rho family GTPases (Brill S et al., 1996, Mol Cell Biol.; 16(9): 4869-4878). The recent observations identify a physiologic scaffolding function for IQGAP2 representing a functional genomic unit in humans uniquely evolved to regulate thrombin-induced plateletcytoskeletal actin reorganization (Schmidt VA., 2003, Blood, 101(8): 3021-3028), but the gene encoding these isoforms has not previously been reported to be expressed at elevated levels in HCC.

- [163] Expression of the mRNA encoding the IQGAP2 polypeptide is induced by an average of 4-fold relative to non-diseased liver in 71% of the HCC cases profiled (Figure 1, Table 3A). Similarly, elevated expression of the encoding mRNA is also evident in FNH but not in the cirrhotic livers (Figure 20 and Tables 4A/5A).
- [164] The HCC induction of the IQGAP2 gene can then be verified by amplification of the sequence from the cDNA with primer pairs specific to IQGAP2 nucleic acid (Assay ID Catalogue Number: Hs00183606_m1) in the Assay-On-Demand (Applied Biosystems, USA) quantitative PCR method. These data suggest that the IQGAP2 polypeptide and/or the encoding nucleic acid can be utilized for the diagnosis, prevention and treatment of disorders according to the invention.
- [165] In yet another preferred embodiment the nucleic acid according to the invention is the member of RAS oncogene family, Rab2 nucleic acid (SEQ ID 106) which has been disclosed before (Accession No. NM_002865) encoding the Rab2 polypeptide (Accession No. NP_002865, SEQ ID 13). The small GTPase Rab2 is a resident of pre-Golgi intermediates and required for protein transport from the endoplasmic reticulum (ER) to the Golgi complex (Tisdale, E. J. et al., 1992, J. Cell Biol., 119: 749- 761). The Rab2 protein, like all small GTPases, contains conserved GTP-binding domains as well as hypervariable carboxyl-terminal and amino-terminal domains. It is suggested that the NH2 terminus of Rab2 is required for its function and for direct interaction with components of the transport machinery involved in the maturation of pre-Golgi intermediates. Rab2 interacts directly with atypical protein kinase C (aPKC) ι / λ and inhibits aPKC ι / λ -dependent glyceraldehyde-3-phosphate dehydrogenase phosphorylation (Tisdale, E.J. 2003, J Biol Chem.; 278(52):52524-30). Though overexpression in lymphoid and myeloid malignancies has been reported, neither Rab2 nucleic acid nor the Rab2 polypeptide has been recognized with respect to elevated levels in disorders according to the invention, preferably in HCC.
- [166] Expression of the mRNA encoding this polypeptide is elevated an average of 5-fold relative to non-diseased liver in 71% of the HCC cases profiled (Figure 2, Table 3A).

Elevated expression of the encoding mRNA is also evident in FNH but not in cirrhosis (Figure 21 and Tables 4A/ 5A).

[167] Furthermore, the expression of this HCC-deregulated mRNA is 5.5-fold and almost 8-fold increased by serum stimulation of quiescent hepatoma cells (Hep3B) upon 8 hours and 12 hours, respectively (Figure 106).

[168] These findings suggest that the Rab2 polypeptide and/or the encoding nucleic acid can be utilized for the diagnosis, prevention and treatment of disorders according to the invention.

[169] In another preferred embodiment the nucleic according to the invention is the Clone 6 cDNA (OBCL6, SEQ ID 125), which is assembled by identification of overlapping sequences from the non-redundant GenBank sequence databases. The initial EST sequence upregulated in HCC relative to non-diseased liver identified with cDNA microarray analysis shows the highest similarity (almost 100% identical) to human genomic clone AL035420 (human DNA sequence from clone RP4-550H1 on chromosome 20q11.1-11.22 containing a high mobility group protein pseudogene). It may be that extending the length of this HCC-deregulated cDNA sequence will reveal that the corresponding RNA encodes a not yet described human protein. Another alternative is that the encoded polypeptide may result from one of the small open reading frames in this sequence. Even further, this RNA may be not translated into polypeptide but may have functional (e.g., regulatory) properties itself.

[170] Surprisingly the sequence from this mRNA is represented at much higher levels in HCC than in normal human liver. This mRNA is elevated an average of 6-fold or more relative to non-diseased liver in 68% of HCC samples profiled (Table 3B, Figure 3). Clone 6 is also elevated 8-fold or more relative to non-diseased liver in FNHs examined, but not in cirrhosis (Figure 40, Tables 4b/5B). Independent RT-PCR analyses of expression levels of might be determined with gene specific oligonucleotide primers. These results show that the strongly upregulated expression of the Clone 6 cDNA sequence is highly specific for disorders according to the invention, especially in HCC and FNH.

[171] Overexpression of the polypeptide and/or the encoding RNA therefore, may be useful for diagnosis of liver disorders. These results clearly demonstrate that the Clone 6 polypeptide and the nucleic acid (SEQ ID 125) encoding the polypeptide (SEQ ID 32) and a functional variant thereof can be utilized for diagnosis, prevention and treatment of disorders according to the invention, in particular for HCC and FNH.

[172] With regard to the treatment it is preferred to carry out the treatment such that the expression of the OBCL6 polypeptide and/or a functional variant thereof; or of the nucleic acid encoding the polypeptide and/or a functional variant thereof is reduced and/or inhibited, for example by administering antisense oligonucleotides or small in-

terfering RNA molecules that specifically interact with the nucleic acid defined in SEQ ID 125 potentially encoding the OBCL6 polypeptide and/or a functional variant thereof.

[173] The treatment may be carried out, for example, such that the activity of the Clone 6 polypeptide and/or a functional variant thereof are reduced and/or inhibited, for instance by administering an antibody directed against the OBCL6 polypeptide and/or a functional variant thereof, or an antibody fragment thereof which block the activity of the Clone 6 polypeptide and/or a functional variant thereof to a patient in need of such treatment. Compared to the state of the art, the OBCL6 polypeptide and/or a functional variant thereof; and/or OBCL6 nucleic acid surprisingly allow improved, more sensitive, earlier, faster, and/or non-invasive diagnosis and/or improved, sustained and/or more effective treatment of the liver disorders and/or other epithelial cancer.

[174] Alternatively, the OBCL6 RNA may be not translated into a polypeptide but may have functional (e.g., regulatory) properties itself. The disease relevance of non-coding regulatory RNAs is now becoming apparent as evidenced, for example, by the role of the non-coding RNA "bantam" involved in cellular proliferation in the eukaryote *Drosophila* (Brennecke J, Hipfner DR, Stark A, Russell RB, Cohen SM. *Cell* (2003) Apr4; 113(1):25-36), and by microRNA-23 that interacts with the transcription factor HES-1 to hinder neuronal differentiation (Kawasaki, H. and Tiara, K. *Nature*, 2003, 423:838-842).

[175] For example, reduction of the level of Clone 6 RNA (knock-down) in proliferating human hepatoma cells with small interfering RNA (siRNA) oligonucleotides can support a functionally significant role for elevated expression of Clone 6 RNA in liver disorders, especially liver cancer.

[176] Further aspect of the invention represents an isolated polypeptide comprising a sequence according to the SEQ ID 32 or a functional variant thereof. Another preferred embodiment is a fusion protein, wherein the fusion protein contains the polypeptide according to the SEQ ID 32 or a functional variant thereof.

[177] Yet another preferred feature of the invention is an isolated nucleic acid according to the SEQ ID 125 or a variant thereof. Further preferred embodiment represents the nucleic acid according to the SEQ ID 125 or a variant thereof, wherein the nucleic acid is a single-stranded or double-stranded RNA.

[178] Still another aspect of the invention represents a nucleic acid according to the SEQ ID 125 or a variant thereof encoding the polypeptide according to the SEQ ID 32 or a functional variant thereof.

[179] Yet another feature of the invention is a vector, wherein the vector contains a nucleic acid selected from the group consisting of a nucleic acid according to the SEQ

ID 125 or a variant thereof encoding the polypeptide according to the SEQ ID 32 or a functional variant thereof. The vector is preferably selected from the group consisting of a knock-out gene construct, a plasmid, a shuttle vector, a phagemid, a cosmid, a viral vector, and an expression vector.

[180] Another aspect of the invention represents a cell, wherein the cell contains the nucleic acid according to the SEQ ID 125 or a variant thereof encoding the polypeptide according to the SEQ ID 32 or a functional variant thereof. In another preferred embodiment the cell is transformed with a vector containing a nucleic acid selected from the group consisting of a nucleic acid according to the SEQ ID 125 or a variant thereof encoding the polypeptide according to the SEQ ID 32 or a functional variant thereof. In still further embodiment of the invention the cell is a transgenic embryonic non-human stem cell.

[181] Yet another feature of the invention represents a transgenic non-human mammal, wherein the transgenic non-human mammal contains the nucleic acid according to the SEQ ID 125 or a variant thereof encoding the polypeptide according to the SEQ ID 32 or a functional variant thereof.

[182] Further aspect is an antibody or an antibody fragment thereof, wherein the antibody is directed against the polypeptide according to the SEQ ID 32 or a functional variant thereof, or against a nucleic acid coding for the polypeptide.

[183] The cDNA expression levels relative to a non-diseased liver (NL) reference sample of sequences according to the invention assessed in tissues from human liver disorders, including Hepatocellular Carcinoma (HCC), Focal Nodular Hyperplasia (FNH) and Cirrhosis (Cirrh.) samples are shown in Tables 3A to 3D, 4A to 4D and 5A to 5D, respectively (median of \log_2 values data between diseased and non-diseased samples obtained from competitive hybridisation to custom-made cDNA microarrays). Median represents 50th percentile of values for each sequence (SEQ ID 94 to 186) per group (HCC, FNH and Cirrh). Number of the samples profiled and the calculated percentage of valid/detectable signals (% detected) are provided. (*) annotates duplicates of the HCCs, FNHs, and Cirrh. profiled.

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[196] **Tables 3A to 3D: Summary of c DNA microarray expression level ratios (HCC vs NL).****Table 3A**

Gene	Median log ₂	Median-fold induction	HCC microarray hybridizations (No)	Detected (%)
PI4K2	0.75	1.68	28	54
ZNF216	4.01	16.07	28	54
AKR1C1	2.78	6.86	56	79
dUT	2.80	6.96	28	46
PACE4	4.60	24.23	28	57
BIGH3	2.31	4.95	28	79
PRKAR1A	1.73	3.32	56	39
s.t. Ocia	1.29	2.45	56	32
SDCCAG28	1.64	3.12	28	71
PRDX1	1.86	3.63	56	71
TMP21	3.08	8.46	56	27
IQGAP2	2.00	3.99	28	71
Rab2	2.38	5.21	28	71
ARF1	3.12	8.71	28	54
HSPC1	2.19	4.55	56	23
TLR5	1.55	2.93	28	64
GAP-SH3	1.72	3.29	28	71
Crisp-3	1.92	3.77	28	57
TM4SF4	1.70	3.24	56	32
AQP9	1.17	2.25	84	36
LOC51716	0.85	1.80	112	72
Cystatin	3.28	9.70	28	46

Ki	2.55		5.85		28		68
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Table 3B

Gene	Median log ₂	Median-fold induction	HCC microarray hybridizations (No)	Detected (%)
Porimin	3.00	7.97	56	9
PTPRZ1	1.94	3.84	84	13
Rab9 effector p40	3.49	11.26	28	39
RBap48	3.10	8.58	28	50
PABPC1	3.69	12.89	28	61
NF1/B2	0.72	1.65	56	57
RPL7	3.08	8.46	140	19
HNRPDL	1.78	3.44	140	26
OBCL6	2.59	6.02 _{...}	28	32
SNRPG	2.39	5.26	56	23
KREV-1	1.51	2.85	28	61
DRB5	1.62	3.08	28	79
PKCI-1	0.62	1.54	28	82
IMPACT	4.03	16.37	28	36
BMI	3.52	11.48	56	16
G3BP	3.40	10.56	28	46
RHEB2	3.31	9.92	28	57
MARCKS	2.68	6.43	56	43
ALURBP	3.01	8.04	28	36
PPGB	2.70	6.49	28	79
GRB2	2.75	6.71	28	43
TRAP1	3.24	9.44	56	20
PDHB	3.05	8.25	28	46

[199]

Table 3C

Gene	Median log ₂	Median-fold induction	HCC microarray hybridizations (No)	Detected (%)
DAD-1	2.02	4.06	56	63
PSME2	2.61	6.11	28	32
QP-C	2.27	4.83	28	79
MTRPS33	2.63	6.20	56	25
ARF4	3.02	8.12	28	36
DDB1	2.23	4.70	28	32
GNG10	1.80	3.49	56	66
DP1	2.68	6.40	56	27
ATP1B1	2.35	5.11	56	39
SLC25A3	2.25	4.75	56	39
SNC6	1.86	3.63	28	61
OMG	2.17	4.51	28	36
PB1S	2.17	4.51	28	36
RPS21	1.75	3.35	112	62
MMP-2	1.80	3.48	28	39
YWHAZ	1.87	3.66	28	89
PPP3R1	1.83	3.56	56	46
CTNNA1	1.11	2.15	112	29
ADCYAP1	0.74	1.67	28	4
syntenin	1.93	3.82	28	79
topoisomerase IIb	2.25	4.76	28	18
UMP-CMPK	1.63	3.09	84	18
PSMD4	2.48	5.59	56	29
hu_BTTF3	1.83	3.57	28	86
rhoA	1.68	3.21	28	68

[200]

Table 3D

Gene	Median log ₂	Median-fol d induction	HCC microarra y hy- bridization s (No)		Detected (%)
LDH-B	1.58	2.99	56		63
TBXA2-R	1.64	3.12	56		38
hu_CAP	1.58	2.98	28		54
hu_PP2a-cat	1.49	2.82	196		6
SDHC	1.55	2.94	56		36
hu_GDP-di2	1.54	2.90	28		32
CCNI	1.70	3.26	28		64
Mac25	1.58	2.98	28		14
TBP	1.10	2.14	84		39
FDX1	1.79	3.46	28		36
NLVCF	1.34	2.53	56		32
GNG3	1.32	2.49	28		32
RCN2	1.88	3.67	56		25
hu_adk2	1.00	2.00	28		46
hu_Dcsa19	1.54	2.91	28		93
c/EBP	1.64	3.11	84		24
Rab GG	1.29	2.44	28		54
**c-syn	2.24	4.74	56		18
PPP1R15A	1.34	2.54	28		36
SCL5A6	3.70	13.00	28		36

[201]

[202] [(**) c-syn represents three alternative nucleotide transcripts with corresponding three protein products

[203]

[204] **Tables 4A to 4D: Summary of c DNA microarray expression level ratios (FNH**

vs NL).

Table 4A

Gene	Median log ₂	Median-fold induction	FNH microarray hybridizations (No)	Detected (%)
PI4K2	1.97	3.91	5	80
ZNF216	2.86	7.25	5	40
AKR1C1	1.18	2.27	10	70
dUT	3.41	10.60	5	40
PACE4	3.65	12.57	5	60
BIGH3	2.02	4.06	5	80
PRKAR1A	1.71	3.28	10	40
s.t. Ocia	0.48	1.40	10	40
SDCCAG28	2.73	6.61	5	40
PRDX1	0.65	1.57	10	70
TMP21	3.68	12.81	10	20
IQGAP2	2.33	5.01	5	80
Rab2	2.57	5.95	5	60
ARF1	2.07	4.18	5	40
HSPC1	2.19	4.57	10	30
TLR5	1.95	3.86	5	60
GAP-SH3	2.86	7.24	5	60
Crisp-3	1.45	2.73	5	60
TM4SF4	2.07	4.19	10	50
AQP9	0.60	1.51	15	33
LOC51716	0.67	1.59	20	75
Cystatin	2.10	4.28	5	20
Ki	2.14	4.41	5	60

[205]

Table 4B

Gene	Median log ₂	Median-fold	FNH	Detected (%)
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		d induction	microarray hybridizations (No)	
Porimin	NA	NA	10	0
PTPRZ1	2.89	7.43	15	20
Rab9 effector p40	NA	NA	5	0
RBap48	3.54	11.67	5	40
PABPC1	1.81	3.50	5	40
NF1/B2	0.64	1.56	10	70
RPL7	3.67	12.69	25	12
HNRPDL	2.25	4.75	25	16
OBCL6	3.07	8.42	5	40
SNRPG	1.38	2.60	10	20
KREV-1	3.73	13.29	5	80
DRB5	0.82	1.77	5	80
PKCI-1	-0.03	0.98	5	80
IMPACT	NA	NA	5	0
BMI	2.97	7.82	10	10
G3BP	3.60	12.13	5	20
RHEB2	3.28	9.68	5	20
MARCKS	1.75	3.35	10	40
ALURBP	1.15	2.22	5	20
PPGB	2.35	5.10	5	80
GRB2	2.89	7.41	5	20
TRAP1	NA	NA	10	0
PDHB	3.79	13.79	5	60

[206]

Table 4C

Gene	Median log ₂	Median-fold induction	FNH microarray hybridizations (No)	Detected (%)
DAD-1	2.01	4.02	10	60
PSME2	NA	NA	5	0
QP-C	1.15	2.21	5	80
MTRPS33	2.88	7.34	10	10
ARF4	3.78	13.76	5	80
DDB1	2.97	7.86	5	40
GNG10	2.87	7.32	10	70
DP1	2.58	5.97	10	20
ATP1B1	1.70	3.26	10	10
SLC25A3	2.95	7.74	10	30
SNC6	0.76	1.69	5	40
OMG	3.31	9.94	5	60
PB1S	1.39	2.62	5	20
RPS21	1.41	2.65	20	50
MMP-2	4.28	19.41	5	20
YWHAZ	1.00	2.00	5	80
PPP3R1	1.54	2.90	10	30
CTNNA1	2.08	4.24	20	40
ADCYAP1	NA	NA	5	0
syntenin	1.83	3.55	5	80
topoisomerase IIb	2.96	7.75	5	40
UMP-CMPK	3.02	8.11	15	27
PSMD4	1.34	2.53	10	10
hu_BTF3	1.01	2.01	5	80
rhoA	1.16	2.23	5	60

Table 4D

Gene	Median log ₂	Median-fold induction	FNH microarra y hy- bridiza s (No)	Detected (%)
LDH-B	1.58	2.99	10	80
TBXA2-R	1.64	3.12	10	40
hu_CAP	1.58	2.98	5	60
hu_PP2a-cat	1.49	2.82	35	11
SDHC	1.55	2.94	10	0
hu_GDP-di2	1.54	2.90	5	40
CCNI	1.70	3.26	5	80
Mac25	1.58	2.98	5	20
TBP	1.10	2.14	15	27
FDX1	1.79	3.46	5	40
NLVCF	1.34	2.53	10	10
GNG3	1.32	2.49	5	80
RCN2	1.88	3.67	10	10
hu_adk2	1.00	2.00	5	80
hu_Dcsa19	1.54	2.91	5	100
c/EBP	1.64	3.11	15	20
Rab GG	1.29	2.44	5	60
**c-syn	2.24	4.74	10	10
PPP1R15A	1.34	2.54	5	20
SCL5A6	3.70	13.00	5	20

[208]

[209] [(**) c-syn represents three alternative nucleotide transcripts with corresponding three protein products

[210]

[211] **Tables 5A to 5D: Summary of c DNA microarray expression level ratios (Cirrh. vs NL).**

Table 5A

Gene	Median log ₂	Median-fold induction	Cirrh. microarray hybridizations (No)	Detected (%)
PI4K2	-0.23	0.85	8	88
ZNF216	NA	NA	8	0
AKR1C1	-0.72	0.61	16	50
dUT	0.40	1.32	8	13
PACE4	0.68	1.60	8	13
BIGH3	1.04	2.05	8	38
PRKAR1A	0.80	1.74	16	13
s.t. Ocia	0.12	1.09	16	6
SDCCAG28	0.35	1.28	8	25
PRDX1	1.38	2.60	16	44
TMP21	NA	NA	16	0
IQGAP2	0.51	1.42	8	50
Rab2	0.88	1.84	8	25
ARF1	1.24	2.36	8	25
HSPC1	-2.55	0.17	16	19
TLR5	1.08	2.12	8	38
GAP-SH3	1.60	3.04	8	25
Crisp-3	1.06	2.09	8	25
TM4SF4	1.23	2.35	16	25
AQP9	0.80	1.74	24	33
LOC51716	-0.56	0.68	32	66
Cystatin	3.15	8.88	8	25
Ki	1.01	2.01	8	25

[212]

Table 5B

Gene	Median log ₂	Median-fold induction	Cirrh. microarray	Detected (%)
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		induction		hybridizations (No)	
Porimin	1.13		2.19	16	6
PTPRZ1	1.21		2.32	24	8
Rab9 effector p40	NA		NA	8	0
RBap48	2.46		5.50	8	13
PABPC1	3.47		11.06	8	13
NF1/B2	1.33		2.51	16	44
RPL7	0.98		1.97	40	5
HNRPDL	-0.33		0.80	40	8
OBCL6	NA		NA	8	0
SNRPG	0.17		1.12	16	13
KREV-1	1.64		3.12	8	38
DRB5	0.32		1.25	8	63
PKCI-1	0.71		1.64	8	75
IMPACT	1.68		3.21	8	25
BMI	2.68		6.41	16	19
G3BP	1.60		3.03	8	13
RHEB2	1.04		2.06	8	13
MARCKS	1.77		3.40	16	25
ALURBP	-1.13		0.46	8	13
PPGB	1.66		3.16	8	50
GRB2	2.62		6.14	8	25
TRAP1	3.06		8.33	16	13
PDHB	1.43		2.69	8	38

[213]

[214]

Table 5C

Gene	Median log ₂	Median-fold induction	Cirr. microarray hybridizations (No)	Detected (%)
DAD-1	1.61	3.05	16	31
PSME2	0.98	1.97	8	38
QP-C	2.87	7.31	8	63
MTRPS33	NA	NA	16	0
ARF4	3.98	15.74	8	13
DDB1	4.11	17.30	8	13
GNG10	1.81	3.51	16	50
DP1	1.33	2.51	16	13
ATP1B1	2.33	5.02	16	19
SLC25A3	0.99	1.99	16	25
SNC6	1.11	2.16	8	50
OMG	1.95	3.87	8	25
PB1S	0.98	1.98	8	38
RPS21	1.16	2.24	32	47
MMP-2	1.00	2.00	8	38
YWHAZ	1.48	2.79	8	75
PPP3R1	1.40	2.64	16	31
CTNNA1	-0.46	0.73	32	22
ADCYAP1	NA	NA	8	0
syntenin	1.26	2.40	8	75
topoisomerase IIb	-0.10	0.93	8	13
UMP-CMPK	1.51	2.85	24	8
PSMD4	-1.63	0.32	16	13
hu_BTF3	1.73	3.33	8	63
rhoA	1.49	2.81	8	50

Table 5D

Gene	Median log ₂	Median-fold induction	Cirrh.micr oarray hy- bridization s (No)	Detected (%)
LDH-B	0.91	1.89	16	75
TBXA2-R	1.05	2.07	16	31
hu_CAP	1.63	3.10	8	25
hu_PP2a-cat	2.13	4.38	56	7
SDHC	NA	NA	16	0
hu_GDP-di2	1.44	2.71	8	50
CCNI	1.12	2.18	8	50
Mac25	1.09	2.13	8	25
TBP	0.76	1.69	24	4
FDX1	1.33	2.52	8	25
NLVCF	1.30	2.47	16	13
GNG3	-0.38	0.77	8	25
RCN2	1.35	2.56	16	6
hu_adk2	1.59	3.00	8	13
hu_Dcsa19	1.29	2.45	8	88
c/EBP	0.25	1.19	24	13
Rab GG	0.56	1.48	8	38
**c-syn	1.62	3.08	16	13
PPP1R15A	0.86	1.81	8	38
SCL5A6	3.95	15.45	8	25

[216]

[217] [(**) c-syn represents three alternative nucleotide transcripts with corresponding three protein products]

[218]

[219] The quantitative assessment of gene expression (SEQ IDs: 102; 99; 101; 106; 98; 96) by RT-PCR (Q-PCR) in Hepatocellular Carcinoma (HCC), Focal Nodular Hyperplasia (FNH) and Cirrhosis (Cirrh) samples is compared to expression pattern in

normal liver (NL), shown in Table 6 (median of \log_2 values). Median represents 50th percentile of values for each sequence per group (HCC, FNH and Cirrh). Number of the samples profiled (SDCCAG28, BIGH3, s.t.OClA, Rab2 and PACE4) represent 18 HCC, 3 FNH/Cirrh./NL; and for AKR1C1 7 HCC and 4 NL. Percentage of valid/detectable signals for SEQ IDs 102; 99; 101; 106; 98; 96 (% detected) is equal to 100%, with exception of PACE4 (*) for which 94.45% HCC cases are detected.

[220]

[221] **Table 6: Summary of differential gene expression levels (SEQ IDs: 102; 99; 101; 106; 98; 96) verified by RT-PCR**

Table 6

Tissue	SDCCAG 28	BIGH3	s.t.OClA	Rab2	PACE4	AKR1C 1
HCC	0.75	1.54	1.6	2.25	0.5*	3.20
FNH	1.29	2.4	2.23	2.63	1.51	NA
Cirrh.	-0.28	0.51	0.83	1.27	1.89	NA
NL	-1.34	0	0.53	0.22	0	0.93

[222]

[223] The quantitative assessment of gene expression of TMF4SF4 and DAD-1 in Hepatocellular Carcinoma (HCC), Focal Nodular Hyperplasia (FNH) and Cirrhosis (Cirrh) samples is compared to expression pattern in normal liver (NL), shown in Tables 7A/7B respectively (median of \log_2 values). Median represents 50th percentile of values for each sequence (SEQ ID 112 and SEQ ID 140) per group (HCC, FNH and Cirrh). Median- fold induction is calculated according to following formula: "2^x" ("x" represents median of \log_2 values). Number of the samples profiled (TM4SF4 and DAD-1 genes) represent 18 HCC, 3 FNH/Cirrh./NL.

[224]

[225] **Table 7A/7B: Summary of differential gene expression levels (SEQ ID 112 and SEQ ID 140) verified by RT-PCR.**

[226]

6

Table 7A

TM4SF4	Median \log_2	Median-fold induction	Number of cases profiled
HCC	2.83	7.11	18
FNH	3.81	14.07	3
Cirrh.	2.66	6.30	3

NL	0	1	3
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[227]

Table 7B

DAD-1	Median log ²	Median-fold induction	Number of cases profiled
HCC	0.62	1.54	18
FNH	1.21	2.31	3
Cirrh.	0.14	1.10	3
NL	0.20	1.15	3

[228]

[229]

In another preferred embodiment of the invention the nucleic acid according to the invention can be used for the construction of antisense oligonucleotides (Zheng and Kemeny, 1995, Clin. Exp. Immunol., 100: 380-382) and/or ribozymes (Vaish et al., 1998, Nucleic Acids Res., 26: 5237-5242; Persidis, 1997, Nat. Biotechnol., 15: 921-922) and/or small interfering double stranded RNAs (Elbashir et al., 2001, Nature, 411: 494-498; Brummelkamp et al., 2002, Science, 296:550-553). In further preferred embodiments of the invention, the stability of the nucleic acid according to the invention can be decreased and/or the translation of the nucleic acid according to the invention inhibited by using RNA interference molecules (oligonucleotides). Thus, for example, the expression of the corresponding genes in cells can be decreased both *in vivo* and *in vitro*. Oligonucleotides can therefore be suitable as therapeutics. This strategy is also suitable, for example, for liver cells, in particular if the antisense oligonucleotides are complexed with liposomes. For use as a probe or as an "antisense" oligonucleotide, a single-stranded DNA or RNA is preferred. Small interfering RNA (siRNA) double stranded oligonucleotides can also be suitable as therapeutics. With this approach a short sequence or sequences of 15 to 22 nucleotides including sequence complementary to the sequence to be therapeutically targeted are exposed to the diseased tissue and serve to dramatically reduce or "knock down" the level of expression of the therapeutic target RNA sequence. siRNA therapeutic approaches in other diseases have been recently reported and are also applicable to liver disorders, liver cancers and other epithelial cancers (Filleur S. et al., Cancer Res., 2003; 63(14): 39-22).

[230]

In a preferred embodiment a nucleic acid according to the invention has been prepared by recombinant methods, by screening a library or isolation from a sample obtained from a patient or a subject. In another preferred embodiment of the invention

the nucleic acid according to the invention has been prepared synthetically. Thus, the nucleic acid according to the invention can be synthesized, for example, chemically with the aid of the DNA sequences described in SEQ ID 94 to SEQ ID 186 and/or with the aid of the protein sequences described in SEQ ID 1 to SEQ ID 93 with reference to the genetic code, e.g. according to the phosphotriester method (see, for example, Uhlmann and Peyman, 1990, Chemical Reviews, 90:543-584).

[231] In another preferred embodiment, the invention relates to a nucleic acid according to the invention or a nucleic acid which is a non-functional mutant variant the nucleic acid or a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, which has been modified by attachment of chemical moieties to the nucleic acid to stabilize it against degradation, so that a high concentration of the nucleic acid is maintained in the cell over a long period (Beigelman et al., 1995, Nucleic Acids Res., 23: 3989-94; Dudycz, 1995, WO 95/11910; Macadam et al., 1998, WO 98/37240; Reese et al., 1997, WO 97/29116). Typically, such stabilization can be obtained by the introduction of one or more internucleotide phosphorus groups or by the introduction of one or more non-phosphorus internucleotides.

[232] Preferred suitable modified internucleotides are summarized in Uhlmann and Peymann (1990 Chem. Rev. 90, 544; see also Beigelman et al., 1995 Nucleic Acids Res., 23: 3989-94; Dudycz, 1995, WO 95/11910; Macadam et al., 1998, WO 98/37240; Reese et al., 1997, WO 97/29116).

[233] In a further embodiment the invention relates to a vector comprising a nucleic acid according to the invention and/or a variant thereof, or a nucleic acid which is a non-functional mutant variant of the nucleic acid, or a nucleic acid having a sequence complementary to one the aforementioned nucleic acids. Preferably the vector is a knock-out gene construct, a plasmid, a shuttle vector, a phagemid, a cosmid, a viral vector, an expression vector and/or a vector applicable in gene therapy. The preparation of such constructs is generally known to the person skilled in the art.

[234] An "expression vector" within the meaning of the present invention preferably comprises at least one promoter or enhancer, i.e. at least one regulatory element comprising at least one translation initiation signal, at least one of the nucleic acids according to the invention or a nucleic acid which is a non-functional mutant variant the nucleic acid or a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, one translation termination signal, a transcription termination signal, and a polyadenylation signal for the expression in eukaryotes.

[235] For the expression of the gene concerned, in general a double-stranded DNA is preferred, the DNA region coding for the polypeptide being particularly preferred. In the case of eukaryotes this region begins with the first start codon (ATG) lying in a Kozak sequence (Kozak, 1987, Nucleic. Acids Res., 15: 8125-48) up to the next stop

codon (TAG, TGA or TAA), which lies in the same reading frame to the ATG. In the case of prokaryotes this region begins with the first AUG (or GUG) after a Shine-Dalgarno sequence and ends with the next stop codon (TAA, TAG or TGA), which lies in the same reading frame to the ATG.

[236] Differentially expressed genes in HCC can contain liver or liver cancer gene-specific regulatory sequences. These non-transcribed sequences, found in the tissue- or disease-specific gene may be used to drive tissue- or disease-specific expression of included therapeutic and/or tumor cell-cytotoxic genes. These regulatory sequences may be used for liver cancer specific expression of a nucleic acid according to the invention or a nucleic acid which is a non-functional mutant variant the nucleic acid or a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids. The screening and construction of such regulatory sequences is generally known to the person skilled in the art.

[237] Suitable expression vectors can be prokaryotic or eukaryotic expression vectors. Examples of prokaryotic expression vectors are, for expression in *E. coli*, e.g. the vectors pGEM or pUC derivatives, examples of eukaryotic expression vectors are for expression in *Saccharomyces cerevisiae*, e.g. the vectors p426Met25 or p426GAL1 (Mumberg et al., 1994, Nucl. Acids Res., 22, 5767-5768), for expression in insect cells, e.g. *Baculovirus* vectors such as disclosed in EP-B1-0 127 839, and for expression in mammalian cells, e.g. the vectors Rc/CMV and Rc/RSV or SV40 vectors, which are all generally obtainable. Specific vectors for production of RNA interference following transfection, such as the pSUPER vector (Brummelkamp et al., 2002, Science, 296:550-553) are also included.

[238] In general, the expression vectors also contain promoters suitable for the respective cell, such as, for example, the trp promoter for expression in *E. coli* (see, for example, EP-B1-0 154 133), the MET 25, GAL 1 or ADH2 promoter for expression in yeast (Russel et al., 1983, J. Biol. Chem., 258, 2674-2682; Mumberg, supra), the *Baculovirus* polyhedrin promoter, for expression in insect cells (see, for example, EP-B1-0 127 839). For expression in mammalian cells, for example, suitable promoters are those which allow a constitutive, regulatable, tissue-specific, cell-cycle-specific or metabolically specific expression in eukaryotic cells. Regulatory elements according to the present invention preferably are promoters, activator sequences, enhancers, silencers and/or repressor sequences.

[239] Examples of suitable regulatory elements which make possible constitutive expression in eukaryotes preferably are promoters which are recognized by the RNA polymerase III or viral promoters, CMV enhancer, CMV promoter, SV40 promoter or LTR promoters, e.g. from MMTV (mouse mammary tumor virus; Lee et al., 1981, Nature, 214, 228-232) and further viral promoter and activator sequences, derived

from, for example, adeno- and adeno-like viruses, HBV, HCV, HSV, HPV, EBV, HTLV or HIV.

- [240] Examples of regulatory elements which make possible regulated expression in eukaryotes are the tetracycline operator in combination with a corresponding repressor (Gossen et al., 1994, *Curr. Opin. Biotechnol.*, 5:516-20).
- [241] Translation initiation signals, translation termination signals, transcription termination signals, and polyadenylation signals are generally known to the person skilled in the art and can be readily obtained from commercial laboratory suppliers.
- [242] Preferably, the expression of the genes relevant for liver disorders and/or epithelial cancer takes place under the control of tissue-specific promoters, for example, under the control of liver-specific promoters such as albumin, alpha fetoprotein, apolipoprotein AI, alpha-1 antitrypsin, and the complement C5 and C8A genes (Schrem et al., 2002, *Pharmacol. Rev.*, 54 129-58; Pontoglio et al., 2001, *J. Expt. Med.*, 194:1683-1689). The regulatory sequences associated with genes highly deregulated in HCC as described herein also provide a preferable method for specific gene expression in these disorders.
- [243] Further examples of regulatory elements which make tissue-specific expression in eukaryotes possible are promoters or activator sequences from promoters or enhancers of those genes which code for proteins which are only expressed in certain cell types.
- [244] Examples of regulatory elements which make possible metabolically specific expression in eukaryotes are promoters which are regulated by hypoxia, by oxidative stress, by glucose deficiency, by phosphate concentration or by heat shock.
- [245] Examples of regulatory elements which make cell cycle-specific expression in eukaryotes possible are promoters of the following genes: *cdc25A*, *cdc25B*, *cdc25C*, cyclin A, cyclin E, *cdc2*, E2F-1 to E2F-5, B-myb or DHFR (Zwicker J. and Müller R., 1997, *Trends Genet.*, 13:3-6). The use of cell cycle regulated promoters is particularly preferred in cases, in which expression of the polypeptides or nucleic acids according to the invention is to be restricted to proliferating cells.
- [246] In order to make possible the introduction of nucleic acids as described above, or a nucleic acid which is a non-functional mutant variant of the nucleic acid and thus the expression of the polypeptide in a eukaryotic or prokaryotic cell by transfection, transformation or infection, the nucleic acid can be present as a plasmid, as part of a viral or non-viral vector. Suitable viral vectors here are particularly: baculoviruses, vaccinia viruses, adenoviruses, adeno-associated viruses, retroviruses and herpesviruses. Suitable non-viral vectors here are particularly: virosomes, liposomes, cationic lipids, or polylysine-conjugated DNA or naked DNA.
- [247] Plasmids, shuttle vectors, phagemids, and cosmids suitable for use according to the invention are also known to the person skilled in the art and are generally obtainable

from commercial laboratory suppliers.

- [248] Examples of vectors applicable in gene therapy are virus vectors, for example adenovirus vectors, retroviral vectors or vectors based on replicons of RNA viruses (Lindemann et al., 1997, Mol. Med. 3: 466-476; Springer et al., 1998, Mol. Cell. 2:549-558). Eukaryotic expression vectors are suitable in isolated form for gene therapy use, as naked DNA can penetrate, for example, into liver cells upon local application or via the blood supply.
- [249] Compared to the state of the art, this fusion construct surprisingly allows improved, more sensitive, earlier, faster, and/or non-invasive diagnosis and/or improved, sustained and/or more effective treatment of the liver disorders, and/or other epithelial cancers.
- [250] In another aspect the invention furthermore relates to a cell comprising a nucleic acid according to the invention and/or a variant thereof. Preferably the cell is transformed with a vector according to the invention. The cell preferably contains a nucleic acid wherein the nucleic acid is either a non-functional mutant variant of a nucleic acid according to the invention. In particular the cell contains a vector comprising a nucleic acid wherein the nucleic acid is a non-functional mutant variant of a nucleic acid according to the invention. Preferably the cell contains a nucleic acid having a sequence complementary to a nucleic acid according to the invention, or a variant thereof. Moreover the cell preferably contains a vector comprising a nucleic acid coding for an antibody according to the invention or a fragment of the antibody. The cell according to the invention may for example be a liver cell, comprising at least one of the aforementioned nucleic acids or a cell which is transformed using one of the above described vectors. Cells can be either prokaryotic or eukaryotic cells, heterologous or autologous cells. Examples of prokaryotic cells are *E. coli* and examples of eukaryotic cells include primary hepatocytes cells, hepatocytes cell lines such as HepG2 and Hep3B cells, yeast cells, for example *Saccharomyces cerevisiae* or insect cells.
- [251] Compared to the state of the art, the cell according to the invention surprisingly allows improved, more sensitive, earlier, faster, and/or non-invasive diagnosis and/or improved, sustained and/or more effective treatment of the liver disorders and/or other epithelial cancers.
- [252] In a preferred embodiment of the invention the cell is a transgenic embryonic non-human stem cell which comprises at least one nucleic acid according to the invention, at least one vector, at least one knock-out gene construct and/or at least one expression vector as described above.
- [253] Processes for the transformation of cells and/or stem cells are well known to a person skilled in the art and include, for example, electroporation or microinjection.

- [254] In another aspect the invention relates to the provision of a transgenic non-human mammal comprising a compound selected from the group consisting of a nucleic acid according to the invention and/or a variant thereof, a nucleic acid which is a non-functional mutant variant the nucleic acid, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, one of the aforementioned nucleic acids in the form of a vector, of a knock-down or knock-out gene construct, and of an expression vector.
- [255] Transgenic animals in general show a tissue-specifically increased expression of the nucleic acids and/or polypeptides and can be used for the analysis of liver disorders and/or epithelial cancers, such as for example HCC, and for development and evaluation of therapeutic strategies for such disorders. Transgenic animals may further be employed in the production of polypeptides according to the invention. The polypeptide produced by the animal may for example be enriched in a body fluid of the animal. The polypeptides according to the invention may for example be isolatable from a body fluid such as the milk.
- [256] Compared to the state of the art, this transgenic non-human mammal surprisingly allows improved, more sensitive, earlier, faster, and/or non-invasive analysis and/or diagnosis of liver disorders and/or other epithelial cancers.
- [257] Processes for the preparation of transgenic animals, in particular of transgenic mice, are likewise known to the person skilled in the art from e.g., US 5,625,122; US 5,698,765; US 5,583,278 and US 5,750,825 and include transgenic animals which can be produced, for example, by means of direct injection of expression vectors according to the invention into embryos or spermatocytes or by injection of the expression vectors into the pronucleus of the fertilized ovum or by means of the transfection of expression vectors into embryonic stem cells or by nuclear transfer into appropriate recipient cells (Polites and Pinkert, DNA Microinjection and Transgenic Animal Production, page 15 to 68 in Pinkert, 1994, Transgenic animal technology: a laboratory handbook, Academic Press, London, UK; Houdebine, 1997, Harwood Academic Publishers, Amsterdam, The Netherlands; Doetschman, Gene Transfer in Embryonic Stem Cells, page 115 to 146 in Pinkert, 1994, supra; Wood, Retrovirus-Mediated Gene Transfer, page 147 to 176 in Pinkert, 1994, supra; Monastersky, Gene Transfer Technology; Alternative Techniques and Applications, page 177 to 220 in Pinkert, 1994, supra).
- [258] If the above described nucleic acids are integrated into so-called "targeting vectors" or "knock-out" gene constructs (Pinkert, 1994, supra), it is possible after transfection of embryonic stem cells and homologous recombination, for example, to generate knock-out mice which, in general, as heterozygous mice, show decreased expression of the nucleic acid, while homozygous mice no longer exhibit expression of the nucleic acid.

The animals thus produced can also be used for the analysis of liver disorders, such as for example HCC, and/or epithelial cancers.

[259] Knock-out gene constructs are known to the person skilled in the art, for example, from the US patents 5,625,122; US 5,698,765; US 5,583,278 and US 5,750,825.

[260] In a further aspect the invention relates to an antibody or a fragment, wherein the antibody or antibody fragment is directed against a polypeptide according to the invention, a functional variant thereof or against a nucleic acid coding for the polypeptide, or a variant thereof.

[261] Compared to the state of the art, these antibody or a fragment thereof surprisingly allow improved, more sensitive, earlier, faster, and/or non-invasive diagnosis and/or improved, sustained and/or more effective treatment of the liver disorders and/or other epithelial cancers.

[262] The term "antibody" or "antibody fragment" is understood according to the present invention as also meaning antibodies or antigen-binding parts thereof prepared by genetic engineering and optionally modified, such as, for example, chimeric antibodies, humanized antibodies, multifunctional antibodies, bi- or oligospecific antibodies, single-stranded antibodies, F(ab) or F(ab)₂ fragments (see, for example, EP-B1-0 368 684, US 4,816,567; WO 98/24884). The antibodies according to the invention can for example be used for diagnosis, prevention and/or treatment of disorders according to the invention such as liver disorders, for example HCC, and/or epithelial cancers.

[263] The invention further relates to a method for producing an antibody or antibody fragment, preferably a polyclonal or monoclonal antibody, specific for the polypeptides or functional variants thereof encoded by the nucleic acids according to the invention, or variants thereof for example for the diagnosis and/or prevention and/or treatment of disorders according to the invention. The process is carried out according to methods generally known to the person skilled in the art by immunizing a mammal, for example a rabbit, with a nucleic acid according to the invention or their variants thereof, or with a polypeptide according to the invention or parts thereof or functional variants thereof, having at least 6 amino acid length, preferably having at least 8 amino acid length, in particular having at least 12 amino acid length, if appropriate in the presence of, for example, Freund's adjuvant and/or aluminum hydroxide gels (see, for example, Harlow and Lane, 1998, Using Antibodies: A Laboratory Manual, Cold Spring Harbor Press, New York, USA, Chapter 5, pp. 53-135). The polyclonal antibodies formed in the animal as a result of an immunological reaction can then be easily isolated from the blood according to generally known methods and purified, for example, by means of column chromatography. Monoclonal antibodies can be produced, for example, according to the known method

of Winter & Milstein (Winter and Milstein, 1991, *Nature*, 349:293-299).

- [264] The present invention further relates to an antibody or antibody fragments directed against a polypeptide described above and reacts specifically with the polypeptides described above, where the above-mentioned parts of the polypeptide are either immunogenic themselves or can be rendered immunogenic by coupling to suitable carriers, such as, for example, bovine serum albumin or keyhole limpet hemocyanin to increase in their immunogenicity. This antibody is either polyclonal or monoclonal; preferably it is a monoclonal antibody.
- [265] Still further, the present invention relates to the generation and/or production of an antibody or antibody fragment specific for the polypeptide according to the invention from a recombinant antibody expression library, such as for example described by Knappik et al. (2000, *J. Molec. Biol.*, 296:57-86).
- [266] In another embodiment of the invention, it is provided an array, wherein the array contains at least two compounds selected from the group consisting of a polypeptide according to the invention, a functional variant thereof, a nucleic acid encoding the polypeptide, a non-functional mutant variant nucleic acid and an antibody or an antibody fragment directed against the polypeptide. Alternatively, the array may contain at least one component according to the invention in combination with previously described components implicated in neoplastic or metabolic liver disorders or epithelial cancers.
- [267] Within the meaning of the invention the term "array" refers to a solid-phase or gel-like carrier upon which at least two compounds are attached or bound in one-, two- or three-dimensional arrangement. Such arrays are generally known to the person skilled in the art and are typically generated on glass microscope slides, specially coated glass slides such as polycation-, nitrocellulose- or biotin- coated slides, cover slips, and membranes such as for example membranes based on nitrocellulose or nylon.
- [268] The aforementioned arrays include bound polypeptides according to the invention or functional variants thereof or nucleic acids coding for the polypeptides, or variants thereof, fusion proteins according to the invention or antibodies or antibody fragments directed against polypeptides according to the invention or functional variants thereof or cells expressing polypeptides according to the invention or functional variants thereof or at least two cells expressing at least one nucleic acid according to the invention, or variants thereof. Nucleic acids coding for these, or variants thereof can also be part of an array. Such arrays can be employed for analysis and/or diagnosis of liver disorders, preferably of HCC, and/or epithelial cancer.
- [269] The invention further relates to a method of producing arrays according to the invention, wherein at least two compounds according to the invention are bound to a carrier material.

- [270] Methods of producing such arrays, for example based on solid-phase chemistry and photo-labile protective groups are generally known (US 5,744,305). Such arrays can also brought into contact with substances or a substance libraries and tested for interaction, for example for binding or change of conformation.
- [271] The invention further relates to a process for preparing an array immobilized on a support material for analysis and/or diagnosis of disorders according to the invention such as a liver disorder, preferably of HCC, in which at least two nucleic acids, at least two polypeptides or at least two antibodies or antibody fragments, and/or at least two cells, or at least one of the aforementioned components in combination with other components relevant to neoplastic and metabolic liver disorders or epithelial cancers, as described above, is used for preparation. The arrays produced by such process can be employed for the diagnosis of disorders according to the invention.
- [272] In another aspect the invention relates to a diagnostic comprising at least one compound selected from the group consisting of a polypeptide according to the SEQ ID 1 to SEQ ID 93 or functional variants thereof, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, and an antibody or an antibody fragment directed against one of the aforementioned polypeptides, combined or together with suitable additives or auxiliaries.
- [273] In a preferred embodiment the invention relates to a diagnostic comprising a polypeptide according to the SEQ ID 1 or a functional variant thereof, a nucleic acid encoding the aforementioned polypeptide, a variant of the aforementioned nucleic acid, and an antibody or an antibody fragment directed against the aforementioned polypeptide, combined or together with suitable additives or auxiliaries.
- [274] In a further aspect the invention relates to a diagnostic comprising at least one compound selected from the group consisting of a nucleic acid according to the SEQ ID 94 to SEQ ID 186 or variants thereof, combined with suitable additives or auxiliaries.
- [275] In a preferred embodiment the invention relates to a diagnostic comprising a nucleic acid according to the SEQ ID 94 or a variant thereof, combined with suitable additives or auxiliaries.
- [276] Compared to the state of the art, this diagnostic surprisingly allows improved, more sensitive, earlier, faster, and/or non-invasive diagnosis of liver disorders and/or other epithelial cancers.
- [277] Within the meaning of the invention "suitable additives" or "auxiliaries" are generally known to the person skilled in the art and comprise, for example, physiological saline solution, demineralized water, gelatin or glycerol-based protein stabilizing reagents. Alternatively, the nucleic acid or polypeptide according to the invention may be lyophilized for stabilization.

- [278] In another example a diagnostic kit based on the nucleic acid sequences according to the invention could be generated. Such a kit may be designed specifically to detect cells altered as a result of the described disorders resident in the circulatory system and thereby detectable in serum from test patients. Additional examples of diagnostic kits includes enzyme linked immunosorbent assays (ELISA), radioimmunoassays (RIA), and detection of an immune reaction or specific antibodies to the polypeptides according to the invention including detection of specific responding immune cells.
- [279] In a preferred embodiment the diagnostic according to the invention contains a probe, preferentially a DNA probe.
- [280] For example, it is possible according to the present invention to prepare a diagnostic based on the polymerase chain reaction (PCR). Under defined conditions, preferably using primers specific for a nucleic acid according to the invention as a DNA probe PCRs specific for the nucleic acid sequences of the invention will be utilized to monitor both the presence, and especially the amount, of specific nucleic acids according to the invention in a sample isolated from a patient obtained for diagnostic or therapeutic purposes. This opens up a further possibility of obtaining the described nucleic acids, for example by isolation from a suitable gene or cDNA library, for example from a liver disorder-specific or liver specific gene bank, with the aid of a suitable probe (see, for example, J. Sambrook et al., 1989, Molecular Cloning. A Laboratory Manual 2nd edn. Cold Spring Harbor Laboratory, Cold Spring Harbor, NY Chapter 8 pages 8.1 to 8.81, Chapter 9 pages 9.47 to 9.58 and Chapter 10 pages 10.1 to 10.67).
- [281] Suitable probes are, for example, DNA or RNA fragments having a length of about 50-1000 nucleotides, preferably having a length of about 10 to about 100 nucleotides, preferably about 100 to about 200 nucleotides, in particular having a length of about 200-500 nucleotides, whose sequence can be derived from the polypeptides according to SEQ ID 1 to SEQ ID 93, and functional variants thereof, and nucleic acids coding for the polypeptides, preferably according to SEQ ID 94 to SEQ ID 186, and variants thereof.
- [282] Alternatively, it is preferably possible with the aid of the derived nucleic acid sequences to synthesize oligonucleotides that are suitable as primers for a polymerase chain reaction. Using this, the nucleic acid described above or parts of this can be amplified and isolated from cDNA, for example HCC-specific cDNA. Suitable primers are, for example, DNA fragments having a length of about 10 to 100 nucleotides, preferably having a length of about 15 to 50 nucleotides, in particular having a length of 17 to 30 nucleotides, whose sequence can be derived from the polypeptides according to SEQ ID 1 to SEQ ID 93 from the nucleic acids according to SEQ ID 94 to SEQ ID 186. The design and synthesis of such primers is generally known to the

person skilled in the art. The primers may additionally contain restriction sites, e.g. suitable for integration of the amplified sequence into vectors, or other adapters or overhang sequences, e.g. having a marker molecule such as a fluorescent marker attached, generally known to the skilled worker.

- [283] In another aspect of the invention it is provided a method of diagnosis of a disorder according to the invention, wherein at least one compound selected from the group consisting of a polypeptide according to the sequence of SEQ ID 1 to SEQ ID 93, functional variants thereof, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, and an antibody directed against one of the aforementioned polypeptides or antibody fragment thereof, is identified in the sample of a patient and compared with at least one compound of a reference library or of a reference sample.
- [284] In a preferred embodiment of the method the disorder of the liver is a disorder selected from the group consisting of cirrhosis, alcoholic liver disease, chronic hepatitis, Wilson's disease, haemochromatosis, hepatocellular carcinoma, benign liver neoplasms, and focal nodular hyperplasia.
- [285] In a preferred embodiment of the method the epithelial cancer is an adenocarcinoma of any organ other than liver, preferably of an organ selected from the group consisting of the lung, the stomach, the kidney, the colon, the prostate, the skin, and the breast.
- [286] Compared to the state of the art, this diagnostic surprisingly allows improved, more sensitive, earlier, faster, and/or non-invasive diagnosis of the liver disorders and/or other epithelial cancers.
- [287] Preferably the sample is isolated from a patient by non-invasive methods as described above.
- [288] For example, serum detection of specific deregulated gene proteins via ELISA assay is one application, alternatively one or a panel of antibodies to deregulated gene products may be used, from which a diagnostic score is deduced based on the combinations of, and the expression levels of gene products expressed in the diseased tissue or in serum from diseased individuals.
- [289] A preferred diagnostic according to the invention contains the described polypeptide or the immunogenic parts thereof described in greater detail above. The polypeptide or the parts thereof, which are preferably bound to a solid phase, e.g. of nitrocellulose or nylon, can be brought into contact *in vitro*, for example, with the body fluid to be investigated, e.g. blood, serum, plasma, ascitic fluid, pleural effusion, cerebral spinal fluid, saliva, urine, semen, in order thus to be able to react, for example, with autoimmune antibodies present in e.g. the blood of the patient. The antibody-peptide complex can then be detected, for example, with the aid of labeled antihuman IgG antibodies. The labeling involves, for example, an enzyme, such as peroxidase,

which catalyses a color or chemiluminescent reaction. The presence and the amount of autoimmune antibody present can thus be detected easily and rapidly by means of the color.

[290] In addition the diagnostic may be directed to detecting an endogenous antibody or fragment thereof present in the sample isolated from a patient which antibody or fragment thereof is directed against a polypeptide according to the invention. Detection of such autoimmune antibodies may be accomplished by methods generally known to the skilled artisan, e.g. by immunoaffinity assays using polypeptides according to the invention or functional variants thereof or parts thereof as a probe. Preferably the presence of such autoimmune antibodies is indicative of the patient suffering from a disorder according to the invention.

[291] A further diagnostic, that is subject matter of the present invention, contains the antibodies according to the invention themselves. With the aid of these antibodies, it is possible, for example, to easily and rapidly investigate a tissue sample as to whether the concerned polypeptide according to the invention is present in an increased amount in order to thereby obtain an indication of possible disease including liver disorders, for example HCC. In this case, the antibodies according to the invention are preferably labeled directly, or more commonly for example these are detected with a specific secondary antibody indirectly, such as with an enzyme or fluorescent molecule, as already described above. The specific antibody-peptide complex can thereby be detected easily, and rapidly, e.g., by means of an enzymatic color reaction.

[292] In still another aspect of the invention it is provided a method for identifying at least one nucleic acid according to the SEQ ID 94 to SEQ ID 186, or a variant thereof differentially expressed in a sample isolated from a patient relative to a reference library or a reference sample comprising the following steps: (a) detecting the expression of at least one nucleic acid according to the SEQ ID 94 to SEQ ID 186, or a variant thereof in a sample isolated from a patient, (b) comparing the expression of said nucleic acid(s) detected in step (a) with the expression of the same nucleic acid(s) in a reference library or in a reference sample, (c) identifying said nucleic acid(s) which is (are) differentially expressed in the sample isolated from the patient compared to the reference library or the reference sample.

[293] Compared to the state of the art the method surprisingly allows improved, more sensitive, earlier, faster, and/or non-invasive identification of differentially expressed nucleic acids according to the invention that provides a useful basis for diagnosing a disorder according to the invention.

[294] Preferably at least 2, at least 3, at least 4 at least 5, at least 6, or at least 7 nucleic acids are identified.

[295] In another preferred embodiment of the method said nucleic acid(s) is (are) detected

by PCR based detection or by a hybridization assay.

[296] In another preferred embodiment of the method the expression of said nucleic acid is compared by a method selected from the group consisting of solid-phase based screening methods, hybridization, subtractive hybridization, differential display, and RNase protection assay.

[297] In a further preferred embodiment of the method the sample isolated from the patient is selected from the group consisting of liver tissue, a liver cell, tissue from another organ subject to cancerous transformation, a cell from this organ, blood, serum, plasma, ascitic fluid, pleural effusion, cerebral spinal fluid, saliva, urine, semen, and feces.

[298] Preferably the reference sample is isolated from a source selected from a non-diseased sample of the same patient or a non-diseased sample from another subject. The selection of appropriate reference samples is generally known to the person skilled in the art. In particular the reference sample may be selected from the group consisting of liver tissue, a liver cell, blood, serum, plasma, ascitic fluid, pleural effusion, cerebral spinal fluid, saliva, urine, semen, and feces.

[299] In another preferred embodiment of the method, the reference library is an expression library or a data base comprising clones or data on non-diseased expression of at least one nucleic acid according to the invention in samples that preferably may be selected from the group consisting of liver tissue, a liver cell, blood, serum, plasma, ascitic fluid, pleural effusion, cerebral spinal fluid, saliva, urine, semen, and feces.

[300] In another aspect of the invention it is provided a method of diagnosing a liver disorder, or an epithelial cancer comprising the following steps: (a) detecting the expression of at least one nucleic acid according to the SEQ ID 94 to SEQ ID 186, or a variant thereof in a sample isolated from a patient, (b) comparing the expression of said nucleic acid(s) detected in step (a) with the expression of the same nucleic acid(s) in a reference library or in a reference sample, (c) identifying said nucleic acid which is differentially expressed in the sample isolated from the patient compared to the reference library or the reference sample, and (d) matching said nucleic acid(s) identified in step (c) with said nucleic acid(s) differentially expressed in a pathologic reference sample or pathologic reference library, wherein the matched nucleic acid(s) is (are) indicative of the patient suffering from a liver disorder or an epithelial cancer.

[301] Compared to the state of the art, this method of diagnosing surprisingly allows improved, more sensitive, earlier, faster, and/or non-invasive diagnosis of the liver disorders and/or other epithelial cancers.

[302] In another preferred embodiment of the method of diagnosis, the pathologic reference sample is isolated from a diseased sample from another patient. The latter patient having been diagnosed as suffering from the disorder according to the invention

which is to be diagnosed. The selection of appropriate pathologic reference samples is generally known to the person skilled in the art. In particular the pathologic reference sample may be selected from the group consisting of liver tissue, a liver cell, blood, serum, plasma, ascitic fluid, pleural effusion, cerebral spinal fluid, saliva, urine, semen, and feces.

[303] In another preferred embodiment of the method of diagnosis, the pathologic reference library is a data base comprising data on differential expression of the at least one nucleic acid according to the invention in samples isolated from at least one patient, excluding the patient under diagnosis, suffering from the disorder according to the invention to be diagnosed in the inventive method relative to control expression in a reference sample or reference library. The pathologic reference library preferably also relates to a differential expression library comprising nucleic acids according to the invention which are differentially expressed in samples isolated from at least one patient, excluding the patient under diagnosis, suffering from the disorder according to the invention to be diagnosed in the inventive method relative to control expression in a reference sample or reference library. The selection of an appropriate pathologic reference library is generally known to the person skilled in the art.

[304] Preferably the liver disorder is a disorder selected from the group consisting of cirrhosis, alcoholic liver disease, chronic hepatitis, Wilson's Disease, haemochromatosis, hepatocellular carcinoma, benign liver neoplasms, and focal nodular hyperplasia. In particular the epithelial cancer is an adenocarcinoma of any organ other than liver, preferably of an organ selected from the group consisting of the lung, the stomach, the kidney, the colon, the prostate, the skin, and the breast.

[305] Within the meaning of the invention the term "detecting a nucleic acid" refers to a method that preferably uncovers, visualizes, separates or allows recognition of the nucleic acid according to the invention from the background of the other components present in the sample. Such methods are generally known to the person skilled in the art and include in situ hybridization, PCR amplification, gel electrophoresis, northern blots, solid phase array (gene chips) based methods, nuclease protection methods (as described and referenced in Alberts, et al. 2002, The Molecular Biology of the Cell, 4th ed. Garland, New York, USA).

[306] Within the meaning of the invention the term "comparing the expression of said nucleic acid(s) detected in step (a) with the expression of the same nucleic acid(s) in a reference library or in a reference sample" refers to a comparison of the expression of the two groups of said nucleic acid(s) on a quantitative or qualitative level by means of an experimental procedure such as differential display, subtractive hybridization, RNase protection assay, or especially DNA chip hybridization. Moreover a comparison of experimental data on said nucleic acid(s) detected in step (a) with the

expression of the same nucleic acid(s) in a reference library as defined above is also included herein.

[307] The term "identifying said nucleic acid(s) which is (are) differentially expressed in the sample isolated from the patient compared to the reference library or the reference sample" within the meaning of the present invention is understood to mean selecting said nucleic acid(s) which is (are) differentially expressed compared to the reference library or the reference samples which fulfills the following criteria: the level of differential expression of the detected said nucleic acid(s) compared to the reference library or the reference samples is greater than about 2 fold, preferably greater than about 5 fold, more preferred greater than about 10 fold upregulated.

[308] The term "matching said nucleic acid(s) identified in step (c) with said nucleic acid(s) differentially expressed in a pathologic reference sample or pathologic reference library " within the meaning of the invention is understood to mean that said nucleic acid(s) identified in step (c) is (are) compared with said nucleic acid(s) differentially expressed in a pathologic reference sample or pathologic reference library. Then said nucleic acid(s) identified in step (c) that is (are) also differentially expressed in the pathologic reference sample or pathologic reference library is (are) matched, i.e. said identical pair is identified and allocated. Since the differential expression of said nucleic acid(s) in the pathologic reference sample or pathologic reference library is (are) indicative of a disorder according to the invention, such correspondence with the differential expression in the sample then indicates that the patient suffers from that disorder.

[309] Preferably the sample is isolated from a patient by non-invasive or preferably minimally invasive methods such as described above, including venupuncture.

[310] The methods of diagnosing according to the invention allows early detection of a liver disorder and/or an epithelial cancer, and/or non-invasive diagnosis of the disorder, based on an essentially concordant expression pattern of the nucleic acids according to the invention detected in the samples isolated from an animal and/or a human patient suffering from a liver disorder and/or an epithelial cancer relative to a reference sample or relative to a reference library. The method has the additional advantage that it also provides additional and novel diagnostic parameters to characterize different subtypes of liver disorders, such as for example subtypes of HCC.

[311] The term "essentially concordant expression pattern" of the nucleic acids according to the invention refers to a pattern of expression that is essentially reproducible from patient to patient or subject to subject, provided that the patients or subjects compared are in the same or comparable pathological condition or healthy condition, respectively.

- [312] In still another aspect of the invention it is provided a method for identifying at least one polypeptide according to the SEQ ID 1 to SEQ ID 93, or a functional variant thereof differentially expressed in a sample isolated from a patient relative to a reference library or a reference sample comprising the following steps: (a) detecting the expression of at least one polypeptide according to the SEQ ID 1 to SEQ ID 93, or a functional variant thereof in a sample isolated from a patient, (b) comparing the expression of said polypeptide(s) detected in step (a) with the expression of said polypeptide(s) in a reference library or in a reference sample, (c) identifying said polypeptide(s) which is (are) differentially expressed in the sample isolated from the patient compared to the reference library or the reference sample.
- [313] Compared to the state of the art, this method surprisingly allows improved, more sensitive, earlier, faster, and/or non-invasive identification of differentially expressed polypeptides according to the invention that provides a useful basis for diagnosing a disorder according to the invention.
- [314] Preferably at least 2, at least 3, at least 4, at least 5, at least 6, or at least 7 polypeptides are identified.
- [315] Preferably the sample is isolated from a patient by non-invasive or minimally invasive methods such as described above, including venupuncture.
- [316] In another embodiment of the method the sample is a sample as defined further above. Preferably the reference sample is a reference sample as defined above.
- [317] In another preferred embodiment of the method, the reference library is an expression library or a data base comprising clones or data on non-diseased expression of the at least one polypeptide according to the invention in samples that preferably may be selected from the group consisting of liver tissue, a liver cell, blood, serum, plasma, ascitic fluid, pleural effusion, cerebral spinal fluid, saliva, urine, semen, or feces. Such databases are generated as a result of the cDNA microarray expression analysis according to the invention and are known to persons skilled in the art. Further reference libraries useable according to the invention have been described above.
- [318] In another aspect of the invention it is provided a method of diagnosing a liver disorder or an epithelial cancer comprising the following steps: (a) detecting the expression of at least one polypeptide according to the SEQ ID 1 to SEQ ID 93, or a functional variant thereof in a sample isolated from a patient, (b) comparing the expression of said polypeptide(s) detected in step (a) with the expression of said polypeptide(s) in a reference library or in a reference sample, (c) identifying said polypeptide(s) which is (are) differentially expressed in the sample isolated from the patient compared to the reference library or the reference sample, and (d) matching said polypeptide(s) identified in step (c) with said polypeptide(s) differentially expressed in a pathologic reference sample or pathologic reference library, wherein the

matched polypeptide(s) is (are) indicative of the patient suffering from a liver disorder or an epithelial cancer.

[319] Compared to the state of the art, this method of diagnosing surprisingly allows improved, more sensitive, earlier, faster, and/or non-invasive diagnosis of the liver disorders and/or other epithelial cancers.

[320] Preferably at least 2, at least 3, at least 4, at least 5, at least 6, or at least 7 polypeptides are identified.

[321] Within the meaning of the invention the term "detecting a polypeptide" refers to a method that preferably uncovers, visualizes, separates and/or allows recognition of the polypeptide according to the invention from the background of the other components present in the sample. Such methods are generally known to the person skilled in the art and includes gel electrophoresis, chromatographic techniques, immunoblot analysis, immunohistochemistry, enzyme based immunoassay, mass spectroscopy, high pressure liquid chromatography, surface plasmon resonance, and/or antibody and protein arrays as described above (Ausubel, F.A. et al., eds., 1990, Current Protocols in Molecular Biology. Greene Publishing and Wiley-Interscience, New York, USA, Chapter 10; Myszka and Rich 2000, Pharm. Sci. Technol. Today 3:310-317). Preferably proteins and polypeptides are prepared from the sample by disruption of the cells with physical sheering or ultrasonic means, for example. Protein is denatured and stabilized with reducing agent treatment and heating and the protein is size fractionated on electrophoretic polyacrylamide gels.

[322] Within the meaning of the invention the term "comparing the expression of said polypeptide(s) detected in step (a) with the expression of the same polypeptide(s) in a reference library or in a reference sample " refers to a comparison of the expression of the two groups of polypeptide(s) on a quantitative and/or qualitative level by means of an experimental procedure such as two dimensional gel electrophoresis, chromatographic separation techniques, immunoblot analysis, surface plasmon resonance, immunohistochemistry, and enzyme based immunoassay. In two dimensional gel electrophoresis, all peptides are first resolved according to isoelectric point in the first electrophoretic dimension and then by size according to methods well known to persons experienced in the art. Moreover a comparison of experimental data on the at least one polypeptide detected in step 1 with the expression of the polypeptide in a reference library as defined above is also included herein.

[323] The term "Identifying said polypeptide(s) which is (are) differentially expressed in the sample isolated from the patient compared to the reference library or the reference sample" within the meaning of the present invention is understood to mean selecting said polypeptide(s) which is (are) differentially expressed compared to the reference library or the reference samples which fulfills the following criteria: the level of dif-

ferential expression of the detected polypeptide(s) compared to the reference library or the reference samples is greater than about 2 fold, preferably greater than about 5 fold, more preferred greater than about 10 fold upregulated.

[324] The term "matching said polypeptide(s) identified in step (c) with said polypeptide(s) differentially expressed in a pathologic reference sample or pathologic reference library " within the meaning of the invention is understood to mean that said polypeptide(s) identified in step (c) is compared with said polypeptide(s) differentially expressed in a pathologic reference sample or pathologic reference library. Then said polypeptide(s) identified in step (c) that is (are) also differentially expressed in the pathologic reference sample or pathologic reference library is (are) matched, i.e. said identical pair(s) is (are) identified and allocated. Since the differential expression of said polypeptide(s) in the pathologic reference sample or pathologic reference library is (are) indicative of a disorder according to the invention, such correspondence with the differential expression in the sample then indicates that the patient suffers from that disorder.

[325] Preferably the sample is isolated from a patient by non-invasive or minimally invasive methods such as described above, including venupuncture.

[326] In another embodiment of the method the sample is a sample as defined further above. Preferably the reference sample is a reference sample as defined above.

[327] In another preferred embodiment of the method of diagnosis, the reference library is an expression library or a dataset comprising clones or data on non-diseased expression of the at least one polypeptide according to the invention in samples that preferably may be selected from the group consisting of liver tissue, a liver cell, blood, serum, plasma, ascitic fluid, pleural effusion, cerebral spinal fluid, saliva, urine, semen, and feces.

[328] An example of a data base according to the invention and further experimental reference libraries useable according to the invention have been described above.

[329] In another preferred embodiment of the method of diagnosis, the pathologic reference sample is a pathologic reference sample as has been defined above.

[330] In another preferred embodiment of the method of diagnosis, the pathologic reference library is a data base comprising data on differential expression of said polypeptide(s) according to the invention in samples isolated from at least one patient, excluding the patient under diagnosis, suffering from the disorder according to the invention to be diagnosed in the inventive method relative to control expression in a reference sample or reference library. The pathologic reference library also relates to a differential expression library comprising polypeptides according to the invention which are differentially expressed in samples isolated from at least one patient, excluding the patient under diagnosis, suffering from the disorder according to the

invention to be diagnosed in the inventive method relative to control expression in a reference sample or reference library. The selection of an appropriate pathologic reference library is generally known to the person skilled in the art.

- [331] Preferably the liver disorder is a disorder selected from the group consisting of cirrhosis, alcoholic liver disease, chronic hepatitis, Wilson's Disease, haemochromatosis, hepatocellular carcinoma, benign liver neoplasms, and focal nodular hyperplasia. In particular the epithelial cancer is an adenocarcinoma of any organ other than liver, preferably of an organ selected from the group consisting of the lung, the stomach, the kidney, the colon, the prostate, the skin, and the breast.
- [332] The methods of diagnosing according to the invention allows early detection of a liver disorder and/or epithelial cancer, and/or non-invasive diagnosis of the disorder, based on an essentially concordant expression pattern of the polypeptides according to the invention detected in the samples isolated from an animal and/or a human patient suffering from a liver disorder and/or epithelial cancer relative to a reference sample or relative to a reference library. The method has the additional advantage that it also provides additional and novel diagnostic parameters to characterize different subtypes of liver disorders, such as for example subtypes of HCC.
- [333] The term "essentially concordant expression pattern" of the polypeptides according to the invention refers to a pattern of expression that is essentially reproducible from patient to patient or subject to subject, provided that the patients or subjects compared are in the same or comparable pathological condition or healthy condition, respectively.
- [334] In another aspect of the invention it is provided a pharmaceutical composition comprising at least one compound selected from the group consisting of a polypeptide according to SEQ ID 1 to 93, a functional variant thereof, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, a nucleic acid which is a non-functional mutant variant of one of the aforementioned nucleic acids, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, a cell comprising one of the aforementioned nucleic acids, a cell comprising the aforementioned vector, an antibody or a fragment of the antibody directed against one of the aforementioned polypeptides, a vector comprising a nucleic acid coding for the aforementioned antibody, a cell comprising the vector comprising a nucleic acid coding for the aforementioned antibody, and a cell comprising the vector comprising a nucleic acid coding for the aforementioned antibody fragment, combined or together with suitable additives or auxiliaries. In a preferred embodiment the pharmaceutical composition contains at least one cell according to the invention, combined or mixed together with suitable additives or auxiliaries.

- [335] When compared to the state of the art of therapy of liver disorders, and/or other epithelial cancers the pharmaceutical composition according to the invention surprisingly provide an improved, sustained and/or more effective treatment.
- [336] A pharmaceutical composition in the sense of the invention encompasses medicaments which can be used for preventing and/or treating liver disorders and/or epithelial cancer. The pharmaceutical composition includes, for instance, a stabilized recombinant antibody that has been produced by expression of specific antibody gene fragments in a cellular system, preferably a eukaryotic system. A recombinant antibody therapeutic for instance, is delivered by injection into the diseased liver region or into the venous or arterial vascular systems or into the hepatic portal system. The injections can be repeated at regular intervals to achieve therapeutic efficacy. Therapeutics according to this invention may also be employed in combinations with other chemical, antibody, or any other therapeutic application to improve efficacy.
- [337] An antibody or other specific-binding partner can be conjugated to a second molecule, such as a cytotoxic agent, and used for targeting the second molecule to a tissue-antigen positive cell (Vitetta E.S. et al, 1993, Immunotoxin therapy, in DeVita Jr. V.T. et al., eds, Cancer: Principles and Practice of Oncology, 4th ed., J.B. Lippincott Co., Philadelphia, 2624-2636). Examples of cytotoxic agents include, but are not limited to, antimetabolites, alkylating agents, anthracyclines, antibiotics, anti-mitotic agents, radioisotopes and chemotherapeutic agents. Techniques for conjugating therapeutic agents to antibodies are well known in prior art.
- [338] In addition to immunotherapy, polynucleotides and polypeptides can be used as targets for non-immunotherapeutic applications, e.g. using compounds which interfere with function, expression, assembly of the genes according to the invention, including but not limited to modulation(s) of the enzymatic active site(s) of the polypeptide(s), change of the protein(s) structure(s), interaction(s) via small molecules, etc.
- [339] The present invention also relates to a process producing a pharmaceutical composition for the treatment and/or prevention of disorders according to the invention, for example, HCC, in which at least one component selected from the group consisting of a polypeptide according to the invention, a functional variant thereof, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, a nucleic acid which is a non-functional mutant variant of one of the aforementioned nucleic acids, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, a cell comprising one of the aforementioned nucleic acids, a cell comprising the aforementioned vector, an antibody or a fragment of the antibody directed against one of the aforementioned polypeptides, a vector comprising a nucleic acid coding for one of the aforementioned antibodies, a cell comprising the

vector comprising a nucleic acid coding for one of the aforementioned antibodies, and a cell comprising the vector comprising a nucleic acid coding for one of the aforementioned antibody fragments, is combined or mixed together with suitable additives.

[340] The present invention furthermore relates to a pharmaceutical composition produced by this process for the treatment and/or prevention of liver disorders and/or epithelial cancers, for example, HCC, which contains at least one component selected from the group consisting of a polypeptide according to the invention, a functional variant thereof, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, a nucleic acid which is a non-functional mutant variant of one of the aforementioned nucleic acids, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, a cell comprising one of the aforementioned nucleic acids, a cell comprising the aforementioned vector, an antibody or a fragment of the antibody directed against one of the aforementioned polypeptides, a vector comprising a nucleic acid coding for one of the aforementioned antibodies, a cell comprising the vector comprising a nucleic acid coding for one of the aforementioned antibodies, and a cell comprising the vector comprising a nucleic acid coding for one of the aforementioned antibody fragments, if appropriate together with suitable additives and auxiliaries.

[341] The invention furthermore relates to the use of this pharmaceutical composition for the prevention and/or treatment of liver disorders, for example, HCC and/or epithelial cancer.

[342] Preferably the pharmaceutical composition is employed for the treatment of a liver disorder selected from the group consisting of cirrhosis, alcoholic liver disease, chronic hepatitis, Wilson's Disease, haemochromatosis, hepatocellular carcinoma, benign liver neoplasms, and focal nodular hyperplasia. In particular the pharmaceutical composition is employed for the treatment of an epithelial cancer that is an adenocarcinoma of any organ other than liver, preferably of an organ selected from the group consisting of the lung, the stomach, the kidney, the colon, the prostate, the skin, and the breast.

[343] Therapy can also be carried out in a conventional manner generally known to the person skilled in the art, e.g. by means of oral application or via intravenous injection of the pharmaceutical compositions according to the invention. It is thus possible to administer the pharmaceutical composition comprising the suitable additives or auxiliaries, such as, for example, physiological saline solution, demineralized water, stabilizers, proteinase inhibitors.

[344] A therapy based on the use of cells, which express at least one polypeptide according to the invention, functional variants thereof or nucleic acids coding for the

polypeptide, or variants thereof can be achieved by using autologous or heterologous cells. Preferred cells comprise liver cells, for example primary cultures of liver cells, liver populating stem or progenitor cells, or blood cells. The cells can be applied to the tissue, preferably to the blood or injected into the liver, with suitable carrier material. Such therapy is preferably based on the notion that upon expression and/or release of a polypeptide according to the invention the polypeptide stimulates an immune response in the patient in need of the treatment.

[345] Preferably the therapeutical approach is directed toward inhibiting the function and/or expression of at least one polypeptide according to the invention and/or the function and/or expression of at least one nucleic acid according to the invention. Such inhibition of the expression and/or function preferably reduces the expression and/or function of the targeted nucleic acid/polypeptide significantly, for example by 50%, in particular by 80% and most preferably by 95%. The inhibition of the expression and/or function preferably abolishes the expression and/or functioning of the targeted nucleic acid/polypeptide. The inhibition can occur at any level, including transcription, translation, and/or perdurance of the nucleic acid (e.g. degradation, stability) in the cell. For inhibiting the biological activity of polypeptides according to the invention e.g. antibodies and small molecules can be targeted to cell-surface, exposed, extracellular, ligand binding, functional, etc. domains of the polypeptide. The term "antagonist/inhibitor" in the sense of the present invention can be directed to, or targeted to any part of the nucleotide and polypeptide according to the invention.

[346] Such reduction or abolished expression and/or functioning of the targeted nucleic acid/polypeptide can be determined using conventional assays for determining the expression and/or functioning of a nucleic acid/polypeptide generally known to the person skilled in the art. In particular such assays for determining the function comprise methods for comparing the biological activity of the targeted nucleic acid/polypeptide before and after administration of the pharmaceutical composition. Preferably such assays for determining the expression comprise methods for comparing the level of expression of the targeted nucleic acid/polypeptide before and after administration of the pharmaceutical composition.

[347] Such therapy is preferably accomplished by the use of a nucleic acid having a sequence complementary to one of nucleic acids according to the invention, i.e. an antisense molecule or a RNA interference molecule which reduces or abolishes the translation of transcribed nucleic acids according to the invention and thereby inhibits the function and/or expression of the targeted nucleic acid/polypeptide.

[348] In a preferred embodiment, the pharmaceutical composition comprises a nucleic acid having a complementary sequence which is an antisense molecule or an RNA interference molecule.

- [349] Preferably such nucleic acid having a complementary sequence may be employed in the form of a vector or a cell comprising such nucleic acid. On the polypeptide level the therapy may in particular be carried out by the use of an antibody or an antibody fragment directed against a polypeptide according to the invention. The antibody or antibody fragment may be administered directly to the patient or preferably the nucleic acid encoding the antibody is contained in a vector which is preferably contained in a cell. The cell or vector may then be administered to the patient in need of such treatment.
- [350] When compared to the state of the art of therapy of liver disorders, and/or other epithelial cancers the method of treating according to the invention surprisingly provide an improved, sustained and/or more effective treatment.
- [351] The invention further relates to a method of treating a patient suffering from of a liver disorder, wherein at least one component selected from the group consisting of a polypeptide according to the invention, a functional variant thereof, a nucleic acid encoding the polypeptide, a variant of one of the aforementioned nucleic acids, a nucleic acid which is a non-functional mutant variant of one of the aforementioned nucleic acids, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, a cell comprising one of the aforementioned nucleic acids, a cell comprising the vector, an antibody directed against the polypeptide, a fragment of the antibody, a vector comprising a nucleic acid coding for the antibody, a cell comprising the vector comprising a nucleic acid coding for the antibody, and a cell comprising the vector comprising a nucleic acid coding for the antibody fragment, optionally combined or together with suitable additives and/or auxiliaries, is administered to the patient in need of a treatment in a therapeutically effective amount.
- [352] Preferably the method of treatment is directed to a liver disorder selected from the group consisting of cirrhosis, alcoholic liver disease, chronic hepatitis, Wilson's disease, haemochromatosis, hepatocellular carcinoma, benign liver neoplasms, and focal nodular hyperplasia. In particular the method of treatment is directed to an epithelial cancer that is an adenocarcinoma of any organ other than liver, preferably of an organ selected from the group consisting of the lung, the stomach, the kidney, the colon, the prostate, the skin, and the breast.
- [353] Methods of administering such compounds or cells have been described in detail above.
- [354] The term "therapeutically effective amount" refers to the administration of an amount of the compound to the patient that results in an "effective treatment" as defined above. Determination of the therapeutically effective amount of the compound(s) is generally known to the person skilled in the art.

- [355] Such methods of treating allow effective treatment of a liver disorder and/or epithelial cancers as described above.
- [356] In another aspect of the invention it is provided a method of stimulating an immune response in a patient suffering from a liver disorder and/or an epithelial cancer to a polypeptide according to the invention, or a functional variant thereof, wherein at least one component selected from the group consisting of a polypeptide according to the invention, a functional variant thereof, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, a cell comprising one of the aforementioned nucleic acids, and a cell comprising the aforementioned vector, is administered to the patient in need of such treatment in an amount effective to stimulate the immune response in the patient.
- [357] When compared to the state of the art of therapy of liver disorders and/or other epithelial cancers, the method of stimulating an immune response according to the invention surprisingly provides an improved, sustained and/or more effective immunization.
- [358] In another aspect of the invention it is provided a method of preventing a patient from developing a liver disorder and/or an epithelial cancer, wherein at least one component selected from the group consisting of a polypeptide according to the invention, a functional variant thereof, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, a nucleic acid which is a non-functional mutant variant of one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, a cell comprising one of the aforementioned nucleic acids, and a cell comprising the aforementioned vector, is administered to the patient in need of such preventive treatment in a therapeutically effective amount.
- [359] When compared to the state of the art of therapy of liver disorders, and/or other epithelial cancers the method of preventing according to the invention surprisingly provides an improved, sustained and/or more effective preventive measure.
- [360] Preferably the method of preventing and/or method of stimulating an immune response is directed to a liver disorder selected from the group consisting of cirrhosis, alcoholic liver disease, chronic hepatitis, Wilson's Disease, haemochromatosis, hepatocellular carcinoma, benign liver neoplasms, and focal nodular hyperplasia. In particular, preferably the method of preventing and/or method of stimulating an immune response is directed to an epithelial cancer which is an adenocarcinoma of any organ other than liver, preferably of an organ selected from the group consisting of the lung, the stomach, the kidney, the colon, the prostate, the skin, and the breast.

- [361] In another aspect of the invention it is provided a method of identifying a pharmacologically active compound comprising the following steps (a) providing at least one nucleotide according to the SEQ ID 94 to SEQ ID 186, or a variant thereof, (b) contacting said nucleotide(s) with suspected to be pharmacologically active compound(s), (c) assaying the interaction of said nucleotide(s) of step (a) with said compound(s) suspected to be pharmacologically active, (d) identifying said compound(s) suspected to be pharmacologically active which directly or indirectly interact with said nucleotide(s) of step (a).
- [362] In a further aspect the invention relates to a method of identifying at least one pharmacologically active compound comprising the following steps: (a) providing at least one polypeptide according to the SEQ ID 1 to SEQ ID 93, or a functional variant thereof, (b) contacting said polypeptide(s), with suspected to be pharmacologically active compound(s), (c) assaying the interaction of said polypeptide(s) of step (a) with said compound(s) suspected to be pharmacologically active, (d) identifying said compound(s) suspected to be pharmacologically active which directly or indirectly interact with said polypeptide(s) of step (a).
- [363] Preferably said nucleotide(s) or said polypeptide(s) is (are) provided in a form selected from the group of said nucleotide(s) or said polypeptide(s) is (are) attached to a column, said nucleotide(s) or said polypeptide(s) is (are) attached to an array, said nucleotide(s) or said polypeptide(s) is (are) contained in an electrophoresis gel, said nucleotide(s) or said polypeptide(s) is (are) attached to a membrane, and said nucleotide(s) or said polypeptide(s) is (are) expressed by a cell.
- [364] It is preferred but not intended to be limited to assay the interaction by a method selected from the group of enzyme and fluorescence based cellular reporter assays in which interaction of the compound suspected to be pharmacological active with a recombinant fusion protein including said polypeptide(s) of step (a) is detected. The interaction may preferably also be assayed by displacement of specific nucleic acid binding aptamer molecule(s) on the recombinant fusion protein, surface plasmon resonance, HPLC and mass spectroscopy.
- [365] Preferably the direct or indirect interaction is selected from the group consisting of induction of the expression of said nucleotide(s) or said polypeptide(s), inhibition of the expression of said nucleotide(s) or said polypeptide(s), activation of the function of said nucleotide(s) or said polypeptide(s), inhibition of the function of said nucleotide(s) or said polypeptide(s).
- [366] In a preferred embodiment a method for identifying an antagonist/inhibitor against the nucleotide according to the SEQ ID 94 to SEQ ID 186, or a variant thereof, comprising (a) contacting at least one nucleotide according to the SEQ ID 94 to SEQ ID 186 with a putative antagonist/inhibitor, and (b) determining whether the putative

antagonist/ inhibitor prevents the activity of the nucleotide.

- [367] In a further aspect of the invention, a method for identifying a putative antagonist/ inhibitor against the polypeptide according to the SEQ ID 1 to SEQ ID 93, or a functional variant thereof, comprising (a) contacting at least one polypeptide according to the SEQ ID 1 to SEQ ID 93 with the putative antagonist/inhibitor, and (b) determining whether the putative antagonist/ inhibitor prevents the activity of the polypeptide.
- [368] The term "pharmacologically active substance" in the sense of the present invention is understood as meaning all those molecules, compounds and/or compositions and substance mixtures which can interact under suitable conditions with a nucleotide according to the SEQ ID 94 to 186 or variants thereof, if appropriate together with suitable additives and/or auxiliaries.
- [369] The term "pharmacologically active substance" in the sense of the present invention is also understood as meaning all those molecules, compounds and/or compositions and substance mixtures which can interact under suitable conditions with polypeptide according to the SEQ ID 1 to 93 or functional variants thereof, if appropriate together with suitable additives and/or auxiliaries.
- [370] Possible pharmacologically active substances are simple chemical (organic or inorganic) molecules or compounds, but can also include peptides, proteins or complexes thereof. Examples of pharmacologically active substances are organic molecules that are derived from libraries of compounds that have been analyzed for their pharmacological activity. On account of their interaction, the pharmacologically active substances can influence the expression and/or function(s) of the nucleotide or polypeptide *in vivo* or *in vitro* or alternatively only bind to the nucleotides or polypeptides described above or enter into other interactions of covalent or non-covalent manner with them.
- [371] A suitable test system, for example, that can be used in accordance with the invention is based on identifying interactions with the two hybrid system (Fields and Sternglanz, 1994, Trends in Genetics, 10, 286-292; Colas and Brent, 1998 TIBTECH, 16, 355-363). In this test system, cells are transformed with expression vectors that express fusion proteins that consist of at least one polypeptide according to the invention and a DNA-binding domain of a transcription factor such as Gal4 or LexA. The transformed cells also contain a reporter gene whose promoter contains binding sites for the corresponding DNA-binding domain. By means of transforming a further expression vector, which expresses a second fusion protein consisting of a known or unknown polypeptide and an activation domain, for example from Gal4 or herpes simplex virus VP16, the expression of the reporter gene can be greatly increased if the second fusion protein interacts with the investigated polypeptide according to the

invention. This increase in expression can be used for identifying new interacting partners, for example by preparing a cDNA library from e.g., liver tissue, or diseased liver tissue for the purpose of constructing the second fusion protein. In a preferred embodiment, the interaction partner is an inhibitor of at least one of the polypeptides according to the SEQ ID 1 to 93 (encoded by the SEQ ID 94 to 186) or functional variants thereof. This test system can also be used for screening substances that inhibit an interaction between the polypeptide according to the invention and an interacting partner. Such substances decrease the expression of the reporter gene in cells that are expressing fusion proteins of the polypeptide according to the invention and the interacting partner (Vidal and Endoh, 1999, Trends in Biotechnology, 17: 374-81). In this way, it is possible to rapidly identify novel active compounds that can be employed for the therapy of and/or prevention of liver disorders and/or epithelial cancer.

- [372] Assays for identifying pharmacologically active substances that exert an influence on the expression of proteins are well known to the skilled person (see, for example, Sivaraja et al., 2001, US 6,183,956). Thus, cells that express a polypeptide according to the SEQ ID 1 for example, or functional variants thereof can be cultured as a test system for analyzing gene expression *in vitro*, with preference being given to liver cells. Gene expression is analyzed, for example, at the level of the mRNA or of the proteins using methods generally known to the person skilled in the art. In this connection, the quantity of a polypeptide according to the SEQ ID 1 to 93 (encoded by the SEQ ID 94 to 186) or mRNA present after adding one or more putative pharmacologically active substances to the cell culture is measured and compared with the corresponding quantity in a control culture. This is done, for example, with the aid of an antibody specifically directed against the polypeptide according to the SEQ ID 1 to 93 (encoded by the SEQ ID 94 to 186), or a functional variant thereof, which can be used to detect the polypeptide present in the lysate of the cells. The amount of expressed polypeptide can be quantified by methods generally known to the person skilled in the art using, for example, an ELISA or a Western blot. In this connection, it is possible to carry out the analysis as a high-throughput method and to analyze a very large number of substances for their suitability as modulators of the expression of at least one of the polypeptides according to the SEQ ID 1 to 93 (encoded by the SEQ ID 13 to 24) (Sivaraja et al., 2001, US 6,183,956). In this connection, the substances to be analyzed can be taken from substance libraries (see, e.g. DE19816414) that can contain many thousands of substances, which are frequently very heterogeneous.
- [373] The invention will now be further illustrated below with the aid of the figures and examples, representing preferred embodiments and features of the invention without the invention being restricted hereto.

[374]

[375] **Figure 1 to 8 RNA expression levels in hepatocellular carcinoma (HCC) samples**

[376] Summary boxplot of expression values in HCC versus non-diseased liver cDNA microarray experiments is provided. The box plot is a graphical representation of \log_2 expression value ratios with the median value indicated by a horizontal line in each box. The extent of each box indicates the iqr = interquartile range (+/- 25th percentile of median value); whiskers indicate of 1.5 times the iqr. Ratios that do not fall within this range are indicated with small circles. For each nucleic acid according to the invention (SEQ ID 95 to 186) elevated expression is apparent in HCC in comparison to non-diseased liver samples. For gene abbreviations see Tables 2A to 2D (**) c-syn represents three alternative nucleotide transcripts with corresponding three protein products.

[377]

[378] **Figure 9 to 99: RNA expression levels in various diseased liver samples and normal tissue(s)**

[379] Summary boxplots of expression values (SEQ ID 94 to 186) in Hepatocellular Carcinoma (HCC), Focal Nodular Hyperplasia (FNH) and Cirrhosis samples (Cirrh.) versus non-neoplastic liver cDNA microarray experiments are provided. The box plot analogs are used as described in Figure 1. For each nucleic acid according to the invention, elevated expression is apparent in HCCs and most of the FNHs samples. Legend: A= HCC; B= FNH; C= Cirrh. For gene abbreviations see Table 2A to 2D (**) c-syn represents three alternative nucleotide transcripts with corresponding three protein products.

[380]

[381] **Figure 100 to 104 : Verification of differential gene expression when compared to normal tissue(s) and other types of cancer**

[382] The Assay-On-Demand (Applied Biosystems, USA) quantitative PCR (Q-PCR) method is utilized for verification of disease deregulated expression of nucleic acids PACE4; BIGH3; s.t.OCLA; SDCCAG28; Rab2; TM4SF4; DAD-1. In Figures 100 to 103, for example, the following commercially available Assay-On-Demand primers are employed: Hs00159844_m1 for PACE4 (SEQ ID 98); Hs00154671_m1 for BIGH3 (SEQ ID 99); Hs00215197_m1 for s.t.OCLA (SEQ ID 101); Hs00246405_m1 for SDCCAG28 (SEQ ID 102); Hs00234094_m1 for Rab2 target (SEQ ID 106), Hs00270335_m1 for TM4SF4 (SEQ ID 112); Hs00154671_m1 for DAD-1 (SEQ ID 140). In another example (Figure 104), the AKR1C1 PCR product is monitored accordingly by incorporation of fluorescent double-stranded DNA intercalating molecules such as SYBR green. The increased expression of AKR1C1 (SEQ ID 96) in

HCC when compared to normal liver (NNL) is verified by using the SEQ ID 199 and SEQ ID 200 primers; data for B and C are not available. Overall, Mann-Whitney-U Test (non-parametric test applied for non-normally distributed data) is performed as Wilcoxon Rank Sum Test (Hollander & Wolfe, 1973, Nonparametric statistical inference. New York: John Wiley & Sons, pgs. 27-33, 68-75; Bauer, D.F., 1972, J. Amer. Statistical Assoc. 67, pgs 687-690). The expression values typically do not fit to a normal distribution so averaging the values may be misleading. However, analysis of the median values demonstrates significant differences in most of the cases between experimental and reference values, particularly in the large data sets.

[383] Legend: A= Hepatocellular Carcinoma (HCC); B= Focal Nodular Hyperplasia (FNH); C= Cirrhosis (Cirrh.); D= Non-Neoplastic liver (NNL). For gene abbreviations see Table 2A to 2D.

[384] **Figure 105: SDCCAG28 protein expression in tissues**

[385] Protein extracts are subjected to immunoblot analysis with HuCAL™ antibodies (Morphosys AG, Germany) specific to recombinant SDCCAG28 protein (e.g., MOR3491 anti ORI010), in order to determine the level of expression of the protein in human tissues [a= ORI010 (human SDCCAG28 recombinant protein); b= Hepatocellular Carcinoma (HCC); c= Normal Liver (NL); d= hepatoma HepG2 cell line. Annotated 33kDa position reflects a size of the predicted SDCCAG28 protein. Following incubation with an anti-HIS mouse antibody to specifically detect the HuCAL™ antibody and a horse-radish peroxidase (HRP) conjugated anti-mouse antibody the immune complexes are detected with a chemiluminescent HRP substrate. It is evident that the native SDCCAG28 protein migrates slightly faster than the recombinant SDCCAG28 protein (approximately 44 kDa band in lane a compared with 40.5 kDa bands prominent in lanes b and d). The intensities of the SDCCAG28 protein band are clearly stronger in the HCC tissue and in the HepG2 hepatoma cell line lysate (lanes b and d, respectively) than in the normal liver tissue (lane c). These analyses indicate that SDCCAG28 protein, the functional product of the SDCCAG28 mRNA specifically upregulated in HCC, is also highly overexpressed in HCC when compared to NNL.

[386]

[387] **Figure 106 to 107: Expression of HCC deregulated genes correlates with proliferation of hepatoma cells**

[388] Proliferation-dependent expression of target gene sequences according to the invention in hepatoma cells Hep3B (Figure 106) and HepG2 (Figure 107) following serum stimulation for 8 hours (black columns) and for 12 hours (white columns) of quiescent cells. The log₂-transformed ratios of serum-stimulated vs. quiescent expression values from cDNA microarray experiment readout are provided. The

substantial increase in the level of expression of these sequences (for example, (ZNF216) SEQ ID 95; (AKR1C1) SEQ ID 96; (PACE4) SEQ ID 98; (SDCCAG28) SEQ ID 102; (TMP21) SEQ ID 104 and (RAB2) SEQ ID 106) in proliferating compared to quiescent hepatoma cells suggests that elevated expression of these sequences is functionally significant for liver cancer cell growth. For gene abbreviations see Table 2A to 2D.

[389]

[390] **Figure 108 to 109: Effect of dUT specific inhibitor on growth of proliferating liver cancer (hepatoma) cell lines**

[391]

Specific dUT enzyme inhibitor (DMT-dU (5'-O-(4,4'-Dimethoxytrityl)-2'-deoxyuridine) (Sigma; No. D7279) is added to the hepatoma cells (Hep3B in Figure 108 and HepG2 in Figure 109) at the 10, 25, 50, 100, 250 and 500 μ M final concentrations in a maximum of 3 μ l of the appropriate solvent. Following incubation of the cells for 24 (black columns) and 48 hours (white columns) respectively, cell viability is assessed via an MTT (3-(4,5-dimethyl-2-thiazolyl)-2,5-diphenyl-2H-tetrazolium bromide) reduction assay known in the prior art (CellTiter 96 Aqueous One Solution Cell Proliferation Assay; Promega), and plotted relative to the number of cells in wells not treated with the inhibitor (control = 0; no inhibitor added). The relationship between the increased concentration of the inhibitor and absorbance ($A=495\text{nm}$) reflects the Hep3B/ HepG2 cytostatic/ anti-proliferative response, suggesting that dUT gene correlates with human liver tumor cell proliferation.

Examples

[392]

[393] **Example 1: Preparation of HCC subtracted cDNA libraries**

[394]

RNA is isolated from three pathologist-confirmed HCC tumor samples and from three pathologist-confirmed non-diseased human liver samples using the TRIZOL reagent (Invitrogen) according to standard methods (Chomczynski & Sacchi, 1987, Anal. Biochem. 162:156-159). The tissues used for the generation of cDNA libraries is from patients that provided specific informed consent for utilization of this material for research purposes, including commercial research. mRNA is converted to double stranded cDNA with reverse transcriptase and DNA polymerase as described in the instructions provided in the "PCR select cDNA subtraction kit" from Clontech Laboratories. To enrich for cDNAs specifically increased and decreased in HCC, cDNAs expressed in common and at similar levels in the reference liver pool and in HCC are removed by subtractive suppressive hybridization (SSH) according to the instructions provided in this kit and as described by Diatchenko et al. (1996, Proc. Natl. Acad. Sci.

USA 93:6025-6030). The SSH steps are performed in both directions (subtracting non-diseased liver cDNAs from HCC cDNAs and subtracting HCC cDNAs from non-diseased liver cDNAs) so the resulting cDNA molecules represent nucleic acid sequences both up- and down-regulated in HCC but do not represent those that are not differentially expressed. In addition a normalized but not subtracted HCC cDNA library is generated to better represent rare mRNA transcripts in HCC tissues. These cDNAs are separately cloned into the pCRII vector (Invitrogen) by ligation into this plasmid followed by electrophoretic transformation into *E. coli* XL-1-Blue electroporation-competent cells (Stratagene). The cloning is carried out as described by the supplier of the vector and competent cells. Cloned differentially expressed cDNAs are plated onto selective (ampicillin) media to isolate individual clones. 960 clones are isolated from each SSH library and 384 clones isolated from the normalized HCC library and cultures established in 96-well microtiter plates. Together these cDNA clones provide a unique representation of mRNA expression specific for human HCC tissue.

[395]

[396]

Example 2: Preparation and hybridization of HCC cDNA microarrays

[397]

1 ml cultures of the SSH cDNA library clones described above are established and the cDNA inserts amplified by PCR with primers specific to the vector sequence flanking the cDNA inserts. The M13 forward (5'- gtaaaacgacggccag-3'; SEQ ID 42) and M13 reverse primers (5'-caggaaacagctatgac-3'; SEQ ID 43) are employed for the PCR amplification of clone inserts. Fifty microliters of the bacterial cultures are heat denatured at 95°C for 10 minutes, debris removed by centrifugation, and 2 µl of the supernatant included in a standard PCR [1X Amplitaq PCR buffer, 2.5 mM MgCl₂, 37.5 nM each primer, 0.5 mM each of dATP, dCTP, dGTP and dTTP and 1.5 units Amplitaq DNA polymerase (Applied Biosystems)]. Reaction conditions are 95°C for 5 minutes followed by 35 cycles of: 94°C for 30 seconds, 60°C for 30 seconds, 72°C for 60 seconds; then followed by 72°C for 7 minutes and then cooled to 4°C. Amplification of cDNA inserts is confirmed by electrophoresis of a 5% of the PCR on a 1% agarose gel comprising 0.4 mg/ml ethidium bromide and run in 1X Tris Acetate EDTA (TAE; 40mM Tris-acetate, 1mM EDTA, pH 7.5) buffer. Each of the SSH clone amplified insert sequences is affixed to sialinized glass microscope slides (GAPS Corning) using a GeneticMicrosystems 417 cDNA arrayer robot to generate custom HCC cDNA microarrays. The protocol for spotting the cDNA inserts to the slides is according to that published by Hedge et al. (2000, Biotechniques 29:548-560) except that PCR products are spotted directly from the PCR microtiter plates without purification or adjustment of the cDNA buffer. In addition to the SSH cDNA clone inserts, numerous control DNAs are spotted onto the microarrays as controls for hybridization reactions. Further,

approximately 2000 publicly available cDNA clones corresponding to genes previously reported to be involved in cancer are purchased from the German Genome Research Center (RZPD), expanded, amplified and spotted onto these microarrays as described above. For preparation of hybridization probes, 20 micrograms of RNA from additional pathology-confirmed liver disorders and from the same quantity of pooled non-diseased liver RNA is converted to cy5-fluorescence-labeled and cy3-fluorescence-labeled cDNA, respectively (cy5-CTP and cy3-CTP, Pharmacia) using reverse transcriptase according to the standard methods (Hedge et al., 2000, Biotechniques 29: 548-560). Using this protocol, these labeled cDNAs are competitively hybridized to the HCC microarrays. Following prehybridization at 42°C for 45 minutes in 5X SCC (0.75 M sodium citrate, 75 mM sodium citrate, pH 7.0); 0.1% SDS (sodium dodecyl sulfate) and 1% BSA (bovine serum albumin), the hybridization is carried out overnight at 42°C in buffer comprising 50% formamide, 5XSSC, and 0.1% SDS. Hybridized slides are washed in stringent conditions (twice at 42°C in 1X SSC, 0.1% SDS for 2 minutes each; twice at room temperature in 0.1X SSC, 0.1% SDS for 4 minutes each; and twice at room temperature in 0.05X SSC for 2 minutes each), dried and analyzed with the GeneticMicrosystems 418 cDNA microarray scanner and associated Imagen 4.1 image analysis software according to the manufacture's recommendations.

[398]

[399] **Example 3: Independent verification of differential expression of the nucleic acids and polypeptides according to the invention**

[400]

RNA is isolated from human patient samples as described in detail above. HCC samples for this analysis are not from the same patients as employed for production of the HCC SSH library or for cDNA microarray chip hybridization. In addition to HCC samples, RNA is prepared from independent non-diseased liver samples to assess expression of the nucleic acids according to the invention in non-diseased liver tissue. Further, RNA is prepared from additional non-diseased and cancer tissues to assess expression of the nucleic acids according to the invention in other normal human tissues and other human cancers. One mg of RNA is converted to single-strand cDNA with the aid of Superscript reverse transcriptase (Invitrogen) in dATP, dCTP, dGTP, and dTTP (0.4 mM each), 7.5 nM random 6-nucleotide primer (hexamers), 10 mM dithiothreitol and 1 unit RNase inhibitor using standard procedures known in the art (Sambrook et al., Molecular Cloning, 2nd ed., 1989, Cold Spring Harbor Press, NY, USA, pp. 5.52-5.55). The presence or absence and the relative concentration of the nucleic acids according to the invention is then confirmed and verified by amplification of these sequences from the cDNA with primer pairs specific to each nucleic acid according to the invention in quantitative kinetic PCR experiments. The

Assay-On-Demand (Applied Biosystems, USA) quantitative PCR method well known for the person skilled in the art might be utilized for verification of disease deregulated expression of nucleic acids according to the invention (Figure 3A/3B). For example, the Assay-On-Demand ID primer numbers for PACE 4, BIGH3, s.t.OCIA, SDCCAG28, Rab2, PRKAR1A, PRDX1, IQGAP2, TM4SF4, DAD-1 target genes are given in the following Table 8.

[401]

[402] **Table 8: Target clones and their Assay-On-Demand ID****Table 8**

Gene	Assay ID (Catalogue Number)
PACE4	Hs00159844_m1
BIGH3	Hs00154671_m1
s.t.Ocia	Hs00215197_m1
SDCCAG28	Hs00246405_m1
Rab2	Hs00234094_m1
PRKAR1A	Hs00267597_m1
PRDX1	Hs 00602020_m1
IQGAP2	Hs00183606_m1
TM4SF4	Hs00270335_m1
DAD-1	Hs00154671_m1

[403]

[404] In further example, AKR1C1 PCR product is monitored accordingly by incorporation of fluorescent double-stranded DNA intercalating molecules such as SYBR green. The AKR1C1 cDNA is validated by using following primers: AKR1C1-p1, 5'- ttgaaaggtcactgaaaaatct-3' (SEQ ID 199) and AKR1C1-p2, 5'-gctggctgcggtgaagtgg-3' (SEQ ID 200) verifying the specific expression of this gene (SEQ ID 96) in HCCs when compared to normal liver samples (Figure 104).

[405]

Usually PCR is performed according to the manufacturer's instructions using TaqMan Universal PCR Mastermix (Cat.Nr. 4304437; Applied Biosystems, Branchburg, New Jersey USA). Kinetic quantitative PCR analyses are performed by using the 7000 Sequence Detection System (Applied). The PCR Setup included two reference genes [GAPDH and β -Actin (GAPDH primers used = GAPDH-p1, SEQ ID 187; GAPDH-P2, SEQ ID 188; GAPDH-p3, SEQ ID 189) (β -Actin primers used = β Actin-p1, SEQ ID 190; β Actin-p2, SEQ ID 191; β Actin-p3, SEQ ID 192)] which are used for independent normalisation of the investigated target genes. A standard curve

(125ng, 25ng, 5ng and 1ng) is used for proper calculation of the expression data. The PCR sample contained 12.5 ng of cDNA, 12.5 µl Universal PCR Mastermix and 1.25µl Assay-On-Demand reagent to give a final volume of 25µl. PCR conditions are used according to the manufacture's instructions (2 min 50°C, 10 min 95°C followed by 40 cycles of 15 sec 95°C and 1 min at 60°C). Amplification of cDNA inserts is additionally confirmed by electrophoresis of a 10% of the PCR on a 2.5% agarose gel comprising 0.5 mg/ml ethidium bromide and run in 1X Tris Acetate EDTA (TAE) buffer. Standard controls for RT-PCR including RNase treatment of samples prior to cDNA synthesis and omission of reverse transcriptase routinely demonstrate the specificity of these reactions. The kinetic quantitative RT-PCR (Q-PCR) verifies the over expression of sequences according to the invention in liver cancer and other liver disorder relative to non-diseased liver (Figures 100 to 104).

[406] Furthermore, the protein expression analyses indicate that for example SDCCAG28 protein, the functional product of SDCCAG28 mRNA specifically upregulated in HCC, is also significantly overexpressed in HCC (Figure 105). To detect SDCCAG28 protein expression in HCC samples standard western blot analysis known in the prior art is performed using protein extracts derived from frozen tissues (stored in liquid nitrogen). The 50 µm sections are obtained (HCC, normal liver) using a refrigerated microtome (cyrocut, Leica CM3050), wherein the identity and homogeneity of the tissues under scrutiny is verified by H&E-staining of sections taken before, in between and after each cutting process. Tissues sections (HCC, normal liver), SDCCAG28 antigen (Morphosys AG, Germany) and HepG2 cells are resuspended in ice-cold RIPA-buffer (50 mM Tris-HCl pH 7.4, 250 mM NaCl, 0.1% SDS, 1% deoxycholate, 1% NP-40) supplemented with 2 µg/ml leupeptin, 2 µg/ml pepstatin, 2 µg/ml aprotinin, 1 mM phenylmethylsulfonylfluoride (PMSF), and 2 mM dithiothreitol followed by homogenization through sonication (2 bursts of 5 seconds) on ice. After incubation for 20 minutes on ice, the lysates are cleared by two centrifugational steps in a micro-centrifuge at 13 000 rpm for 15 minutes at 4°C and the supernatants are collected. Protein concentrations are determined by the Bradford assay(Biorad) using bovine serum albumin as a standard. Equal amounts of protein (typically 10-30 µg) are separated on a 12% SDS-PAGE gel and transferred electrophoretically to a polyvinylidene difluoride (PVDF) membrane (Hybond-P, Amersham Biosciences) through Semidry-blotting (TE 70, Amersham). The membrane is blocked for 1 hour (or overnight) at room temperature in blocking solution [5 to 10% milkpowder (Micrbiology/Lactan:1.15363.0500) in TBS-T (25 mM Tris-HCl pH 7.4, 137 mM NaCl, 3 mM KCl, comprising 0.1% Tween-20 (Merck: 822184) and 2% BSA (Sigma:A-7906))] and incubated with the primary antibody specific for the SDCCAG28 recombinant protein (Morphosys AG, Germany), usually in the concentration between

30ng to 50ng/ml in TBS-T/1% milk solution at 4°C overnight with agitation. After removal of the primary antibody solution and several washes in TBS-T, the membrane is incubated with a mouse anti-HIS antibody to specifically detect the primary antibody (Dianova, 1:25000) followed by a rabbit anti-mouse HRP (horse-radish peroxidase)-conjugated antibody (Dako, 1: 1000) for one hour at room temperature. Following several washes in TBS-T, detection is performed through chemiluminescence (ECL, Amersham) detection of HRP activity and exposing the membrane to x-ray film.

[407] These data provide independent verification of deregulated expression of the nucleic acids and polypeptides according to the invention in HCC. Expression of the nucleic acids and polypeptides according to the invention is either absent or observed only at very low levels in non-diseased liver, thereby validating the differential expression of these nucleic acids identified by hybridization to the cDNA microarray. The results provide surprising evidence that the nucleic acids and polypeptides according to the invention can be used to diagnose, prevent and/or treat disorders according to the invention.

[408]

[409] **Example 4: Sequences according to the invention are increased in proliferating liver cancer (hepatoma) cell lines**

[410] Human hepatoma cell lines (Hep3B, HepG2) are cultured in DMEM supplemented with 10% fetal bovine serum (FBS) in a humidified incubator with 5% CO₂ at 37°C. The cells are split to about 20% confluency and subsequently rendered quiescent by culturing in the absence of serum for 3 days. After the starvation period, the cells are stimulated to proliferate by the addition of 10 % FBS to the media. Samples are taken before and following the induction of cell growth (0, 8 and 12 hours) for the preparation of RNA and for determination of the position of the cells in the cell cycle by FACS (fluorescence activated cell sorting) analysis. Accordingly, to determine the cell cycle distribution by propidium iodide (PI) staining, the cells are harvested by trypsinization, washed twice with phosphate buffered saline (PBS) and finally resuspended in 500 µl PBS. Subsequently, 5 ml prechilled methanol is added. After 10 minutes incubation at -20°C the cell suspension is directly used for FACS analysis following 3 times washing in PBS, resuspended in 500 µl propidium iodide (PI) staining buffer (DNA-Prep Stain, Part No. 6604452; Beckman Coulter) and incubated for 15 minutes at 37°C. Finally, 70 µl of 1M NaCl is added and the samples are kept on ice protected from light prior to analysis on an EPICS XL-MCL flow cytometer (Beckman Coulter). Cells prepared from an asynchronous cell population are used as reference.

[411] The isolated RNA is used to monitor the expression of genes in quiescent vs. pro-

liferating hepatoma cells by cDNA microarray analysis. Following labeling with fluorescent dyes as described in example 2, the RNAs are hybridized on a specifically developed HCC- specific cDNA microarray chip that also contained control genes which are known to be expressed in a cell cycle dependent manner. Finally, the data are analysed using ImaGene 4.1 and GeneSight software packages. The signals obtained for 0 hours samples isolated before the addition of serum are used as reference. The \log_2 -transformed ratios of serum-stimulated vs. quiescent expression values from the cDNA experiment readout is provided in Figure 106 to 107.

[412] These data indicate that the sequences according to the invention are correlated with human liver tumor cell proliferation. Compared to the state of the art, these nucleic acids and polypeptides therefore surprisingly allow improved, more sensitive, earlier, faster, and/or non-invasive diagnosis of the liver disorders and/or epithelial cancers.

[413]

[414] **Example 5: Effect of dUT specific small molecule inhibitor on growth of proliferating liver cancer (hepatoma) cell lines**

[415] To determine the effects of small molecule inhibitors of activity of enzyme polypeptides according to the invention on the growth of human hepatoma cells, for example a specific dUT inhibitor (DMT-dU (5'-O-(4,4'-Dimethoxytrityl)-2'-deoxyuridine) (Sigma; No. D7279) is employed. Hep3B or HepG2 cells are seeded into 96-well plates at 10,000 and 7,500 cells, respectively, in a total volume of 150 μ l of growth DMEM media supplemented with 10% fetal calf serum. The next day of incubation at 37 °C, the dUT enzyme inhibitor is added to the cells at the 10, 25, 50, 100, 250 and 500 μ M final concentrations in a maximum of 3 μ l of the appropriate solvent. Following incubation of the cells for 24 and 48 hours, cell viability is assessed via an MTT (3-(4,5-dimethyl-2-thiazolyl)-2,5-diphenyl-2H-tetrazolium bromide) reduction assay known in the prior art (CellTiter 96 Aqueous One Solution Cell Proliferation Assay; Promega) according to the manufacturer's instructions. Thirty μ l of the assay reagent are added directly to the culture wells, incubated for 1-2 hours and then absorbance at 495 nm is recorded using a microtiter plate reader (Anthos 2010; Anthos Labtec Instruments). Each value represents the mean of at least 4 replicates. Control cells (= 0) receive solvent only (Figures 108 to 109)

[416] The relationship between the increased concentration of the inhibitor and absorbance indicates that application of the aforementioned specific dUT inhibitor to hepatoma cells elicits a cytostatic/ anti-proliferative response, suggesting a specific role of the dUT gene in human liver tumor cell proliferation.

[417]

[418] **Example 6: Elevation of enzymatic activity in hepatoma cells correlates with**

AKR1C1 target gene overexpression in liver disorders

[419] A comparison of the enzymatic activity of a target gene encoded polypeptide gives insight whether a deregulation of mRNA transcript is also reflected by a significant increase in activity that indicates its functional role in tumor biology. In a substrate-specific reaction, the activity of AKR1C1 (SEQ ID 96) is determined (see below Table 9).

[420] Enzymatic assays are performed by using lysates prepared from frozen tissues (stored in liquid nitrogen) or from cell pellets derived from asynchronously growing human hepatoma cell lines (Hep3B, HepG2). 50 μ m sections obtained from pieces of frozen tissues using a freezing microtome (Cryocut, Leica CM3050) and the identity and homogeneity of the tissues under scrutiny is verified by a pathologist following H & E-staining of sections taken before, in between, and after each cutting process. Tissues sections as well as frozen cell pellets are resuspended in ice-cold lysis buffer (50 mM KPO₄ pH 7.0, 10 mM KOAc, 2 mM MgCl₂) supplemented with 2 μ g/ml leupeptin, 2 μ g/ml pepstatin, 2 μ g/ml aprotinin, 1 mM phenylmethylsulfonylfluoride, and 2 mM dithiothreitol followed by homogenization through sonication (2 bursts of 3 seconds) on ice. After incubation for 15 minutes on ice, the lysates are cleared by two centrifugation steps in a microcentrifuge at 13,000 rpm for 15 minutes at 4°C and the supernatants are collected. Protein concentrations are determined by the Bradford assay (Biorad) using bovine serum albumin as a standard.

[421] The AKR1C1 enzymatic activity is measured spectrophotometrically based on the oxidation of 1-acenaphthenol in 1.0 ml systems containing 1 mM 1-acenaphthenol (in 4% methanol), 2.3 mM NAD⁺, and various amounts of whole cell lysate in 100 mM potassium phosphate buffer (pH 7.0). Reactions runs at 25°C wherein the change in absorbance of pyridine nucleotide over time is monitored at 340 nm on a Beckman DU640 spectrophotometer. Absorbance values are plotted versus time, and slope-values versus time (min⁻¹) are calculated from initial reaction velocities using linear least-squares regression analysis, see Table 9 (HCC = Hepatocellular Carcinoma; NNL = Non-Neoplastic (Normal) Liver).

[422]

[423]

[424]

[425]

[426] **Table 9: Enzymatic assay for AKR1C1 (SEQ ID 96)**

[427]

Table 9

Tissue	Protein con-	Slope	Weighted Mean of
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	centration [μg]	time ⁻¹ [min ⁻¹]	the slope [min ⁻¹]
NNL1	100	0.0048	0.0043
	200	0.0076	
NNL2	100	0.0057	0.0054
	200	0.0102	
HCC11	100	0.0130	0.0127
	200	0.0247	
HCC28	100	0.0097	0.0095
	200	0.0187	
HCC30	100	0.0334	0.0317
	200	0.0599	
HCC2	100	0.0136	0.0102
	200	0.0137	
HCC13	100	0.0158	0.0128
	200	0.0197	

[428]

[429]

The HCC samples (HCC11, HCC28, HCC30 and HCC2) are characterized by a weighted mean of the slope approximately 2-3-fold higher than the NNL samples. These data clearly show the correlation between the upregulation of AKR1C1 gene transcript in HCC with the induction of the AKR1C1 enzymatic activity in hepatoma cell lines, suggesting that the sequences according to the invention are correlated with human liver tumor cell proliferation. Compared to the state of the art, these nucleic acids and polypeptides therefore surprisingly allow improved, more sensitive, earlier, faster, and/or non-invasive diagnosis of the liver disorders and/or epithelial cancers.

[430]

[431]

[432]

Example 7: A method of diagnosing using HCC specific probes

[433]

A diagnostic method for disorders according to the invention preferably based on the polymerase chain reaction (PCR) can be established. A standard PCR detection of nucleic acid sequences of the invention can be sufficient to identify, for example, circulating HCC tumor cells in the blood stream of the patient. Detection of expression of nucleic acid sequences of the invention in tumor biopsy material however, such as from a fine needle biopsy, would also be a preferred indication for this diagnostic

procedure. Nucleic acid sequences of the invention, ZNF216 (SEQ ID 95) for example, are not detected in most non-diseased tissues and relatively specifically expressed in e.g. HCC. Elevated expression of this nucleic acid in FNH and HCC is also demonstrated indicating the potential discriminatory power of such an approach for differential diagnosis of liver diseases (Figures 1 and 9; Tables 3A/4A).

[434] The PCR diagnostic would preferably require approximately 1 pg, preferably at least 100 ng, more preferably at least 1 µg of RNA isolated from patient material. In the preferred utilization the RNA would be isolated according to standard procedures from, e.g., the white blood cell fraction preferably from circulating blood obtained by the minimally invasive venupuncture procedure. In this preferred case, the procedure would detect the presence of HCC tumor cells in the blood circulatory system. RNA could similarly be isolated from liver or other tissue biopsy material.

[435] For specific detection of ZNF216, the PCR diagnostic would include several primers specific for ZNF216 nucleic acid sequence, including a specific primer set for cDNA synthesis from the RNA generated from the patient sample, such as for example (ZNF216-p1, 5'-ttctttctgcacatgaaacatctg-3' (SEQ ID 195). Also included would be forward and reverse PCR primers specific for ZNF 216 nucleic acid sequence such as for example, ZNF216-p2, 5'-gagaggacaaaataactaccc-3' (SEQ ID 196) and ZNF216-p3, 5'-caattcaggagctttttctca-3' (SEQ ID 197), and for increased specificity and heightened sensitivity a fluorescently-labeled hydrolysis probe would be included such as, for example, ZNF216-pr, 5'-tactgggctgagaaactgatggactgggctga-3', SEQ ID 198 (from nucleotide 694 to 663 of the SEQ ID 95 reverse strand). The specificity of this detection assay may be further heightened with alternative primers specific for the ZNF216 sequence including an independent pair of specific PCR forward and reverse primers ("nested" primers) located on the amplicon of the outer forward and reverse PCR primers. In this case the probe primer would be specific for the amplicon the nested PCR primer pair.

[436] Quantitative assessment of AKR1C1 mRNA levels, for example, may also be achieved in such detection strategies as illustrated in Figure 3C using kinetic quantitative PCR with, for example:

[437] cDNA may be prepared from the patient RNA sample following digestion of the RNA with RNase-free DNase-1 (Roche) to eliminate potential contamination by genomic DNA. This contamination possibility is further controlled by including primers for PCR amplification from sequences of different exons of the gene such that PCR products resulting from a genomic DNA template (and thereby not reflective of expression of the mRNA corresponding to for example ZNF216) would be larger than the RNA specific PCR products. cDNA synthesis can e.g. be primed by the ZNF216-specific ZNF216-p1 (SEQ ID 195; at about 1 µM) with the aid of reverse tran-

scriptase [such as Maloney murine leukemia virus reverse transcriptase (Roche) at about 2 unit/reaction] in an appropriate buffer such as 50 mM Tris-HCl, 6 mM MgCl₂, 40 mM KCl, and 10 mM dithiothreitol, pH 8.5. Also required in the cDNA synthesis reaction is dATP, dCTP, dGTP and dTTP, each at about 1 mM, RNase inhibitor, such as placental RNase inhibitor (Roche) at about 1-10 units/reaction. cDNA synthesis would be preferably carried out at 42°C for 30 to 60 minutes followed by heating at 95°C for 10 minutes to denature the RNA template. The resulting cDNA can be employed as the template for a PCR to detect ZNF 216 in the blood (or liver or tissue biopsy sample). The additional reagents required for PCR detection of ZNF216 would preferably also be provided including: 10X Taq DNA polymerase buffer (500 mM Tris-Cl pH 8.3, 25 mM MgCl₂, 0.1% Triton X-100); a mixture of dATP, dCTP, dGTP and dTTP for a final concentration of 0.2 mM each; Taq DNA polymerase (2.5U/reaction), and ZNF216 specific primers such as ZNF216-p1 (SEQ ID 195), ZNF216-p2 (SEQ ID 196) and ZNF216-p3, (SEQ ID 197), and for increased specificity and heightened sensitivity a fluorescently-labelled hydrolysis probe ZNF216-pr, SEQ ID 198 (0.1 - 1 µM final concentration). A positive control for PCR amplification such DNA from a plasmid clone with the ZNF216 sequence insert would preferably also be included (1-10 ng/reaction). The PCR can e.g. be carried out over 22-40 cycles of 95°C for 30 seconds, 60°C for 30 seconds, 72°C for 60 seconds. As indicated above, preferred additional sensitivity and specificity may be achieved in this diagnostic procedure by utilization of the additional ZNF216 primer set located within the sequence amplified with the original PCR primer set. In this case a subsequent PCR under conditions similar to those utilized in the first PCR reaction except that would be employed to amplify the nested sequence in a reaction that included 1-10 µl of the first PCR as the template DNA. Alternatively, the reaction may preferably be carried with the first primer set for 10-15 cycles after which and 1-10 µl of this reaction then included as template in a new PCR reaction with nested primers (and including all the necessary PCR components). Detection of ZNF216 specific PCR product(s) should preferably utilize agarose gel electrophoresis as is known in the art and described in previous examples. Included in the diagnostic should preferably be a comparable fluid or tissue extract as a control for such PCR-based diagnostic test. This may include serum or plasma from non-diseased individuals and/or serum, plasma or tissue extracts from an appropriate animal model. If the PCR-determined expression of the nucleic acid according to the invention such as the product of the reaction with primers ZNF216-p1 (SEQ ID 195), ZNF216-p2 (SEQ ID 196), ZNF216-p3 (SEQ ID 197) and ZNF 216-pr (SEQ ID 198) is upregulated in the sample isolated from the patient relative to the control and if in particular the upregulated expression essentially matches the disorder specific (mean) expression ratios then such matching is indicative

of the patient suffering from the disorder. Variations on this approach can also be appreciated. The cDNA synthesis and PCR amplifications can be carried out sequentially or simultaneously in a single reaction vessel utilizing heat stable DNA polymerases with reverse transcriptase activities, such as provided by the Titan one-tube or *Carboxydotherrnus* DNA polymerase one-set RT-PCR systems from Roche. Alternatively the PCR product can be monitored by incorporation of fluorescently labeled primers or various fluorescence-based indicators of PCR product including the Taqman probe hydrolysis systems, as described above and with fluorescent double-stranded DNA intercalating molecules such as SYBR green. The fluorescent-based approaches provide advantage as the accumulation of PCR product can be continuously monitored to achieve sensitive quantitative assessment of expression of the nucleic acid according to the invention. This should be particularly advantageous for nucleic acids increased in blood or tissues of disorders according to the invention but also present at lower levels in non-diseased patients and tissues such that quantitative information about the level of expression of the nucleic acid is acquired. Further, as with this example, accurate quantitation of nucleic acid expression levels contributes to differential diagnosis, between cirrhosis and HCC for example. Comparison of this data with supplied standards indicative of disease and absence of disease provides an important advantage for such a diagnostic procedure.

[438] Additional variations on this diagnostic strategy include simultaneous detection of multiple nucleic acids according to the invention and/or of nucleic acids according to the invention together with other nucleic acids implicated in the disorder. Further hybridization-based diagnostic detection of nucleic acids according to the invention is also envisioned. In this case mRNA detection preferably utilizing detection of RNA transferred to a membrane by capillary or electrophoretic blotting, RNase protection or in situ hybridization on patient cells or tissue biopsy samples is also effective.

[439] By similar methods and variants thereof the nucleic acids according to the invention and/or of nucleic acids according to the invention together with other nucleic acids can be utilized for diagnosis of the disorders according to the invention.

[440]

[441] **Example 8: A method of diagnosing via antibody detection of polypeptides according to the invention**

[442] A preferred diagnostic method for disorders according to the invention is based on antibodies directed against a polypeptide according to the invention. For example, a diagnostic procedure may preferably employ serum detection of specific upregulated gene proteins via enzyme-linked immunosorbent assay (ELISA) assay. In a simple form the diagnostic assay preferably includes a microtiter plate or strip of microtiter wells, e.g., thoroughly coated with an isolated and purified antibody specific to a

polypeptide according to the invention such as, ZNF216 (SEQ ID 2), AKR1C1 (SEQ ID 3). The antibody may for example be an affinity purified polyclonal antibody, such as is commonly raised in rabbits, for example, or a purified monoclonal antibody such as is commonly produced in mice according to procedures well established in the art (Cooper, H.M. & Paterson, Y., (2000), *In Current Protocols in Molecular Biology* (Ausubel, F.A. et al., eds.) pp. 11.12.1 – 11.12.9, Greene Publ. & Wiley Intersci., NY); (Fuller S.A. et al., (1992), *In Current Protocols in Molecular Biology* (Ausubel, F.A. et al., eds.) pp. 11.4.1 – 11.9.3, Greene Publ. & Wiley Intersci., NY). Preferably, the antibody may be a recombinant antibody obtained from phage display library panning and purification as has been described by Knappik et al. (2000, *J. Molec. Biol.* 296:57-86) or by Chadd and Chamow (2001 *Curr. Opin. Biotechnol.* 12:188-94), or a fragment thereof. The antibody coating is preferably achieved by dilution of the anti-ZNF216 antibody or anti-AKR1C1 antibody to 1-100 µg/ml in a standard coating solution such as phosphate buffered saline (PBS). The antibody is preferably bound to the absorptive surface of the microtiter well (such as a Nunc Maxisorp immunoplate) for 60 minutes at 37°C, or overnight at room temperature or 4°C. Prior to binding sample to the coated wells, the wells are preferably thoroughly blocked from non-specific binding by incubation for 15-60 minutes at room temperature in a concentrated protein solution such as 5% bovine serum albumin in phosphate buffered saline or 5% non-fat dry milk powder resuspended in the same buffer. Preferably, the patient sample material is then applied to the microtiter wells, diluted into the blocking solution to increase specificity of detection. The sample may be for example plasma or serum or protein extract from tissue biopsy or surgical resection prepared according to methods well known in the art (Smith, J.A. (2001) *In, Current Protocols in Molecular Biology*, Ausubel, F.A. et al., eds) pp. 10.0.1- 10.0.23, Greene Publ. & Wiley Intersci., NY). In particular, the patient sample is brought into contact with the antibody-coated well for 30-120 minutes (or longer) at room temperature or at 4°C. Non-specifically interacting proteins are preferably removed by extensive washing with a standard wash buffer such as 0.1 M Tris-buffered saline with 0.02-0.1% Tween 20, for example. Washes are preferably carried out for 3-10 minutes and repeated 3-5 times. Detection of ZNF216 polypeptide in the patient sample is for example achieved by subsequent binding reaction with a second, independent anti-ZNF216 antibody, generated as described above, recognizing a distinct epitope on the ZNF216 polypeptide in the standard two-site 'sandwich' type ELISA. Binding of the second anti-ZNF216 antibody or AKR1C1 antibody is for example achieved by incubating the wells in the antibody (at a concentration of 1-100 µg/ml in blocking solution, for example) at room temperature for 30-60 minutes followed by extensive washing as in the previous step. The second antibody may preferably be directly coupled to an enzyme capable of producing a

colorigenic or fluorogenic reaction product in the presence of an appropriate substrate, such as alkaline phosphatase. Alternatively, for example an anti-species and anti-isotype specific third antibody, so coupled to an enzyme, is employed to generate a reaction product that preferably can be detected in a standard spectrophotometric plate reader instrument. For the reaction product development, the washed (as above) antibody-antigen-enzyme complex is preferably exposed to the colorigenic substrate, such as AttoPhos from Roche for about 10 minutes at room temperature, the reaction may be stopped with a low pH buffer such as 50 mM Tris-HCl pH 5.5, or can instead be directly assayed. The amount of specifically bound ZNF216 polypeptide or AKR1C1 polypeptide is for example determined by measurement of the amount of the enzymatic reaction product in each well following excitation at the appropriate wavelength in the spectrophotometer (420 nm in this case). Measurement is preferably made in the plate reader at the emission wavelength (560 nm in this case). Preferably included in the diagnostic is a ZNF216 protein standard or an AKR1C1 protein standard, such as purified recombinant ZNF216 polypeptide or AKR1C1 polypeptide, for example. A dilution series of this protein standard is preferably included in parallel in the ELISA as a control for the reactions and to deduce a protein standard curve for comparison of polypeptide expression levels as is well known in the art. A concentration range corresponding indicative of the particular liver disorder(s) should preferably be provided in the diagnostic. In addition, a comparable fluid or tissue extract should preferably also be included as a control for such ELISA test. This may preferably include serum or plasma from non-diseased individuals and/or serum, plasma or tissue extracts from an appropriate animal model. Such ELISA detection diagnostics are common in the art (see for example, Hauschild et al., 2001, Cancer Res. 158:169-77). The sample: control protein levels determined by ELISA are compared with ELISA-determined disorder specific protein expression ratio values preferably determined in pathologist-confirmed tissues of patients suffering from a disorder according to the invention in relation to control samples. In case the protein level of the sample: control essentially matches the disorder specific protein expression ratio values such matching is preferably indicative of the patient suffering from the disorder. Preferably such diagnosis is carried out for more than 1 polypeptide according to the invention.

[443] In addition the diagnostic may be directed to detecting an endogenous antibody directed against a polypeptide according to the invention, or a functional variant thereof or fragment thereof present in the sample isolated from a patient which antibody or fragment thereof is directed against a polypeptide according to the invention. Detection of such autoimmune antibodies may be accomplished by methods generally known to the skilled artisan, e.g. by immunoaffinity assays such the ELISA

described in detail above using polypeptides according to the invention or functional variants thereof or parts thereof as a probe. The presence of such autoimmune antibodies is indicative of the patient suffering from a disorder according to the invention.

[444] In addition or alternatively, a relevant diagnostic kit based upon immunohistochemical detection of at least one polypeptide according to the invention can be formulated. In such a kit, for example a purified antibody or antibodies specific for the polypeptide(s) according to the invention can be included as well as preferably the reagents necessary to detect the binding of the antibody (ies) to patient cells or tissue sections. These reagents include, for example a specific anti-species and subtype specific secondary antibody -directed against a polypeptide according to the invention of a functional variant thereof- preferably coupled to an enzyme capable of catalysis of e.g. a colorigenic substrate or coupled to a fluorophore (such as Texas Red, for example). Preferably the enzymatic substrate would also be included as well as washing and incubation buffers. An additional optional component of such a kit may be a section of positive control tissue, e.g. liver, or tissues or a section from a packed pellet of cells specifically expressing the polypeptide(s) as a positive tissue control. Instructions provided would include preferred and/or alternative methods of antigen retrieval for detection of the polypeptide(s) according to the invention or e.g., indication that frozen, rather than formalin fixed and paraffin-embedded tissue material should be employed. In this case, recommendations would preferably be included for fixation of frozen tissue sample sections, such as immersion in ice-cold acetone for 10 minutes. Further instructions would preferably provide recommendations for the concentration of antibodies to use in the detection of the gene product(s) as well as e.g., recommended and suggested incubation times and temperatures for exposure of the tissue to the immunological reagents provided. Preferred reaction buffers for the antibody incubations, such as 0.01% - 0.1% tween-20 comprising phosphate buffered saline including 3% normal sheep serum, could also be included. Further, specific conditions for washing of the tissue sections prior to and following incubation in the specific antibody would be preferably included, such as for example, 4 washes with 0.1% tween-20 comprising phosphate buffered saline for 5 minutes each. Such immunohistochemical detection protocols are known to a person skilled in the art. In general the kit would preferably include a panel of images of specific immunohistochemical staining results from positive and negative tissue examples and in particular tables indicating which result is indicative of the patient suffering from the disorder to be diagnosed as a user guide. Utilization of such a kit would preferably rule out, support or confirm diagnoses of the aforementioned liver disorders, liver cancer, or epithelial cancers according to the invention.

[445] As specified above for nucleic acid-based diagnostic approaches, diagnostics based on detection and/or quantitation of polypeptides according to the invention may include 1 or more of such polypeptides. Moreover, simultaneous detection of such polypeptides together with other peptides implicated in the disorders according to the invention may be employed in such diagnostics.

[446] It will be apparent to those skilled in the art that various modifications can be made to the compositions and processes of this invention. Thus, it is intended that the present invention cover such modifications and variations, provided they come within the scope of the appended claims and their equivalents. All publications cited herein are incorporated in their entireties by reference.

[447]

Claims

- [001] A diagnostic comprising at least one compound selected from the group consisting of the polypeptide according to SEQ ID 1 to 93, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, and an antibody or an antibody fragment directed against one of the aforementioned polypeptides, combined or together with suitable additives or auxiliaries.
- [002] The diagnostic according to claim 1, wherein the nucleic acid is a probe.
- [003] The diagnostic according to claim 2, wherein the probe is a DNA probe.
- [004] A pharmaceutical composition comprising at least one component selected from the group consisting of the polypeptide according to claim 1, a polypeptide according to SEQ ID 1 to 93, a functional variant of one of the aforementioned polypeptides, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, a nucleic acid which is a non-functional mutant variant of one of the aforementioned nucleic acids, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, a cell comprising one of the aforementioned nucleic acids, a cell comprising the aforementioned vector, an antibody or a fragment of the antibody directed against one of the aforementioned polypeptides, an antibody or a fragment of the antibody directed against a functional variant of one of the aforementioned polypeptides, a vector comprising a nucleic acid coding for one of the aforementioned antibodies, a cell comprising the vector comprising a nucleic acid coding for one of the aforementioned antibodies, and a cell comprising the vector comprising a nucleic acid coding for one of the aforementioned antibody fragments, combined or together with suitable additives or auxiliaries.
- [005] The pharmaceutical composition according to claim 4, wherein the nucleic acid having a complementary sequence is an antisense molecule or an RNA interference molecule.
- [006] A method of diagnosis of a liver disorder or an epithelial cancer, wherein at least one compound selected from the group consisting of a polypeptide according to the sequence of SEQ ID 1 to SEQ ID 93, a functional variant of one of the aforementioned polypeptides, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, a nucleic acid which is a non-functional mutant variant of one of the aforementioned nucleic acids, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, an antibody or a fragment of the antibody directed

against one of the aforementioned polypeptides, and an antibody or a fragment of the antibody directed against a functional variant of one of the aforementioned polypeptides, is identified in the sample of a patient and compared with at least one compound of a reference library or of a reference sample.

- [007] The method according to claim 6, wherein the liver disorder, is a disorder selected from the group consisting of cirrhosis, alcoholic liver disease, chronic hepatitis, Wilson's Disease, haemochromatosis, hepatocellular carcinoma, benign liver neoplasms, and focal nodular hyperplasia.
- [008] The method according to claim 6, wherein the epithelial cancer is an adenocarcinoma of an organ selected from the group consisting of the lung, the stomach, the kidney, the colon, the prostate, the skin, and the breast.
- [009] A method of treating a patient suffering from a liver disorder or an epithelial cancer, wherein at least one component selected from the group consisting of a polypeptide according SEQ ID 1 to 93, a functional variant of one of the aforementioned polypeptides, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, a nucleic acid which is a non-functional mutant variant of one of the aforementioned nucleic acids, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, a cell comprising one of the aforementioned nucleic acids, a cell comprising the aforementioned vector, an antibody or a fragment of the antibody directed against one of the aforementioned polypeptides, an antibody or a fragment of the antibody directed against a functional variant of one of the aforementioned polypeptides, a vector comprising a nucleic acid coding for the antibody, a cell comprising the vector comprising a nucleic acid coding for the antibody, and a cell comprising the vector comprising a nucleic acid coding for the antibody fragment, combined or together with suitable additives or auxiliaries, is administered to the patient in need of a the treatment in a therapeutically effective amount.
- [010] The method of treating according to claim 9, wherein the nucleic acid having a complementary sequence is an antisense molecule or an RNA interference molecule.
- [011] The method of treating according to claim 10, wherein the RNA interference molecule is administered in the form of a double stranded RNA or a vector expressing the double stranded RNA.
- [012] The method according to claim 10, wherein the RNA interference molecule has a size range selected from the group consisting of from 15 to 30 nucleotides.
- [013] The method according to one of claims 9 to 12, wherein the liver disorder, is a

disorder selected from the group consisting of cirrhosis, alcoholic liver disease, chronic hepatitis, Wilson's Disease, haemochromatosis, hepatocellular carcinoma, benign liver neoplasms, and focal nodular hyperplasia.

[014] The method according to one of claims 9 to 13, wherein the epithelial cancer is an adenocarcinoma of an organ selected from the group consisting of the lung, the stomach, the kidney, the colon, the prostate, the skin, and the breast.

[015] A method of stimulating an immune response to a polypeptide according to the sequence of SEQ ID 1 to SEQ ID 93, or a functional variant thereof in a patient suffering from a liver disorder or an epithelial cancer, wherein at least one component selected from the group consisting of a polypeptide according to the sequence of SEQ ID 1 to SEQ ID 93, a functional variant thereof, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, a cell comprising one of the aforementioned nucleic acids, and a cell comprising the aforementioned vector, is administered to the patient in need of such treatment in an amount effective to stimulate the immune response in the patient.

[016] A method for identifying at least one nucleic acid according to SEQ ID 94 to SEQ ID 186, or a variant thereof differentially expressed in a sample isolated from a patient relative to a reference library or a reference sample comprising the following steps: (a) detecting the expression of at least one nucleic acid according to SEQ ID 94 to SEQ ID 186, or a variant thereof in a sample isolated from a patient, (b) comparing the expression of said nucleic acid(s) detected in step (a) with the expression of the said nucleic acid(s) in a reference library or in a reference sample, (c) identifying said nucleic acid(s) which is (are) differentially expressed in the sample isolated from the patient compared to the reference library or the reference sample.

[017] A method of diagnosing a liver disorder or an epithelial cancer comprising the following steps: (a) detecting the expression of at least one nucleic acid according to SEQ ID 94 to SEQ ID 186, or a variant thereof in a sample isolated from a patient, (b) comparing the expression of said nucleic acid(s) detected in step (a) with the expression of said nucleic acid(s) in a reference library or in a reference sample, (c) identifying said(s) nucleic acid which is (are) differentially expressed in the sample isolated from the patient compared to the reference library or the reference sample, and (d) matching said nucleic acid(s) identified in step (c) to said nucleic acid(s) differentially expressed in a pathologic reference sample or pathologic reference library, wherein the matched nucleic acid(s) is (are) indicative of the patient suffering from a liver disorder or an

epithelial cancer.

- [018] The method according to claim 17, wherein in step (a) at least 2 nucleic acids are identified.
- [019] The method according to claim 17, wherein in step (a) the detection of said nucleic acid(s) is (are) by PCR based detection or by a hybridization assay.
- [020] The method according to one of claims 17 to 19, wherein in step (b) the expression of said nucleic acid(s) is compared by a method selected from the group consisting of solid-phase based screening methods, hybridization, subtractive hybridization, differential display, and RNase protection assay.
- [021] The method according to one of claims 17 to 20, wherein the sample isolated from the patient is selected from the group consisting of liver tissue, a liver cell, tissue from another organ subject to cancerous transformation, a cell from this organ, blood, serum, plasma, ascitic fluid, pleural effusion, cerebral spinal fluid, saliva, urine, semen, and feces.
- [022] The method according to one of claims 17 to 21, wherein the reference sample is isolated from a source selected from a non-diseased sample of the same patient and a non-diseased sample from another subject.
- [023] The method according to one of claims 17 to 22, wherein the reference sample is selected from the group consisting of liver tissue, a liver cell, blood, serum, plasma, ascitic fluid, pleural effusion, cerebral spinal fluid, saliva, urine, semen, and feces.
- [024] The method according to one of claims 17 to 23, wherein the reference library is an expression library or a data base comprising clones or data on liver disorder-specific expression of said nucleic acid(s) of step (a).
- [025] The method according to one of claims 17 to 24, wherein the pathologic reference sample is isolated from a source selected from a diseased sample from another patient suffering from a liver disorder or epithelial cancer.
- [026] The method according to claim 17 to 25, wherein the pathologic reference library is a data base comprising data on differential expression of said nucleic acid(s) in step (a) in samples isolated from another patient suffering from a liver disorder or epithelial cancer relative to control expression in a reference sample or reference library.
- [027] The method according to claim 17 to 26, wherein the liver disorder, is a disorder selected from the group consisting of hepatocellular carcinoma, benign liver neoplasms, and cirrhosis.
- [028] The method according to claim 17 to 26, wherein the epithelial cancer is an adenocarcinoma of an organ selected from the group consisting of the lung, the stomach, the kidney, the colon, the prostate, the skin and the breast.

- [029] A method for identifying at least one polypeptide according to SEQ ID 1 to SEQ ID 93, or a functional variant thereof differentially expressed in a sample isolated from a patient relative to a reference library or a reference sample comprising the following steps: (a) detecting the expression of at least one polypeptide according to SEQ ID 1 to SEQ ID 93, or a functional variant thereof in a sample isolated from a patient, (b) comparing the expression of said polypeptide(s) detected in step (a) with the expression of said polypeptide(s) in a reference library or in a reference sample, (c) identifying said polypeptide(s) which is (are) differentially expressed in the sample isolated from the patient compared to the reference library or the reference sample.
- [030] A method of diagnosing a liver disorder or epithelial cancers comprising the following steps: (a) detecting the expression of at least one polypeptide according to SEQ ID 1 to SEQ ID 93, or functional variants thereof in a sample isolated from a patient, (b) comparing the expression of said polypeptide(s) detected in step (a) with the expression of said polypeptide(s) in a reference library or in a reference sample, (c) identifying said polypeptide(s) which is (are) differentially expressed in the sample isolated from the patient compared to the reference library or the reference sample, and (d) matching said polypeptide(s) identified in step (c) with said polypeptide(s) differentially expressed in a pathologic reference sample or pathologic reference library, wherein the matched polypeptide(s) are indicative of the patient suffering from a liver disorder, or an epithelial cancer.
- [031] The method according to claim 30, wherein at least 2 polypeptides are identified.
- [032] The method according to claim 30 or 31, wherein the polypeptides are detected by a method selected from the group consisting of gel electrophoresis, chromatographic techniques, immunoblot analysis, immunohistochemistry, enzyme based immunoassay, surface plasmon resonance, HPLC, mass spectroscopy, immunohistochemistry, and enzyme based immunoassay.
- [033] The method according to one of claims 30 to 32, wherein the polypeptides are compared by a method selected from the group consisting of two dimensional gel electrophoresis, chromatographic separation techniques, immunoblot analysis, surface plasmon resonance, immunohistochemistry, and enzyme based immunoassay.
- [034] The method according to one of claims 30 to 33, wherein the sample isolated from a patient is selected from the group consisting of liver tissue, a liver cell, tissue from another organ subject to cancerous transformation, a cell from this organ, blood, serum, plasma, ascitic fluid, pleural effusion, cerebral spinal fluid, saliva, urine, semen, and feces.

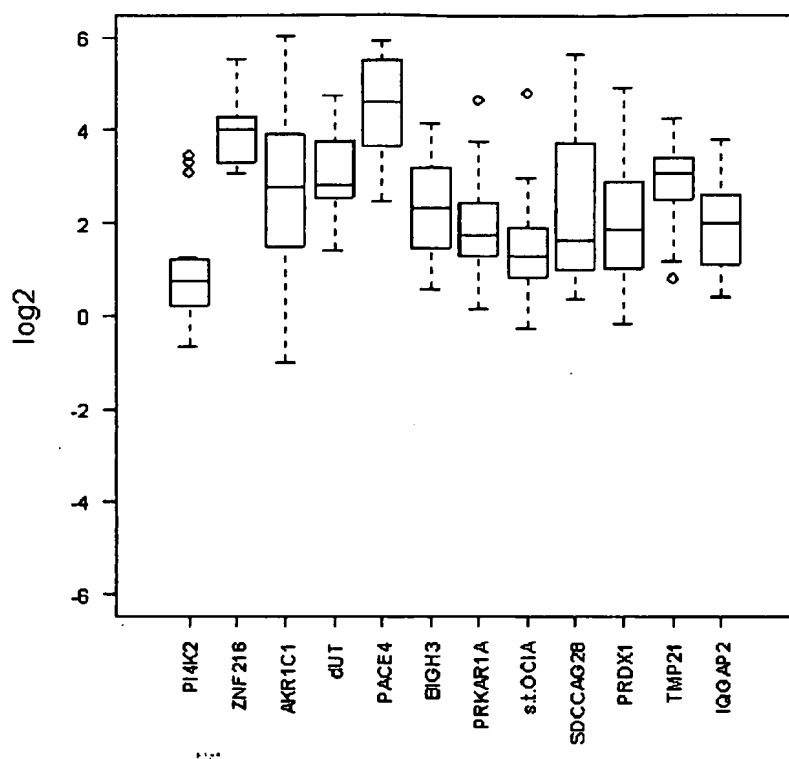
- [035] The method according to one of claims 30 to 34, wherein the reference sample is isolated is from a source selected from a non-diseased sample of the same patient and a non-diseased sample from another subject.
- [036] The method according to one of claims 30 to 35 wherein the reference sample is selected from the group consisting of liver tissue, a liver cell, blood, serum, plasma, ascitic fluid, pleural effusion, cerebral spinal fluid, saliva, urine, semen, and feces.
- [037] The method according to one of claims 30 to 36, wherein the reference library is an expression library or a data base comprising clones or data on liver disorder-specific expression of said polypeptide(s) of step (a).
- [038] The method according to claim 30 to 37, wherein the pathologic reference sample is isolated from a source selected from a diseased sample from another patient suffering from a liver disorder and epithelial cancer.
- [039] The method according to claim 30 to 38, wherein the pathologic reference library is a data base comprising data on differential expression of said polypeptide(s) of step (a) in samples isolated from another patient, suffering from a liver disorder or epithelial cancer, relative to control expression in a reference sample or reference library.
- [040] The method according to claim 30 to 39, wherein the liver disorders is a disorder selected from the group consisting of hepatocellular carcinoma, benign liver neoplasms, and cirrhosis.
- [041] The method according to one of claims 30 to 40, wherein the epithelial cancer is an adenocarcinoma of an organ selected from the group consisting of the lung, the stomach, the kidney, the colon, the prostate, the skin, and the breast.
- [042] A method of preventing a patient from developing a liver disorder or an epithelial cancer, wherein at least one component selected from the group consisting of a polypeptide according to the sequence of SEQ ID 1 to SEQ ID 93, a functional variant thereof, a nucleic acid encoding one of the aforementioned polypeptides, a variant of one of the aforementioned nucleic acids, a nucleic acid having a sequence complementary to one of the aforementioned nucleic acids, a nucleic acid which is a non-functional mutant variant of one of the aforementioned nucleic acids, a vector comprising one of the aforementioned nucleic acids, or a variant thereof, a cell comprising one of the aforementioned nucleic acids, or a variant thereof, and a cell comprising the aforementioned vector, is administered to the patient in need of such preventive treatment in a therapeutically effective amount.
- [043] A method of identifying a pharmacologically active compound comprising the following steps: (a) providing at least one polypeptide according to the SEQ ID 1

to 93, or a functional variant thereof, (b) contacting said polypeptide(s) with (a) compound(s) suspected to be pharmacologically active, (c) assaying the interaction of said polypeptide(s) of step (a) with said compound(s) suspected to be pharmacologically active, (d) identifying said compound(s) suspected to be pharmacologically active which directly or indirectly interact with said polypeptide(s) of step (a).

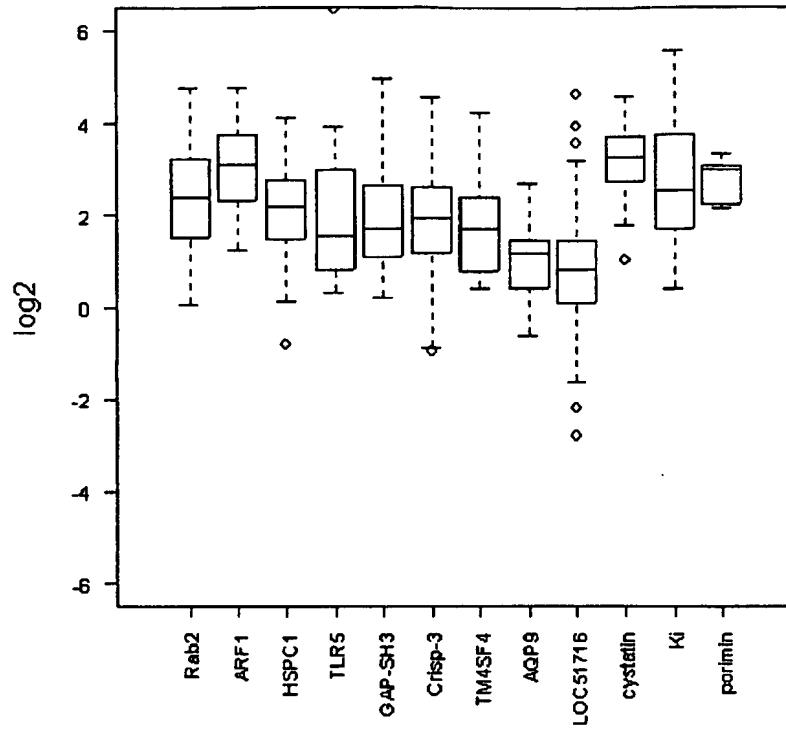
- [044] The method according to claim 43, wherein said polypeptide(s) of step (a) is (are) attached to a column, said polypeptide(s) is (are) attached to an array, contained in an electrophoresis gel, attached to a membrane, or is (are) expressed by a cell.
- [045] The method according to claim 43 or 44, wherein the interaction is assayed enzyme or fluorescence based cellular reporter methods.
- [046] The method according to claim 43 or 44, wherein the interaction is assayed by surface plasmon resonance, HPLC, or mass spectroscopy.
- [047] The method according to claim 43, wherein the direct or indirect functional interaction of step (d) is selected from the group consisting of induction of the expression of said polypeptide(s) of step (a), inhibition of said polypeptide(s), activation of the function of said polypeptide(s), and inhibition of the function of said polypeptide(s).
- [048] An isolated polypeptide comprising a sequence according to SEQ ID 32, or a functional variant thereof.
- [049] A fusion protein comprising a polypeptide according to claim 48.
- [050] An isolated nucleic acid, or a variant thereof encoding the polypeptide according to claim 48.
- [051] The nucleic acid according to claim 50, wherein the nucleic acid is a single-stranded or double-stranded RNA.
- [052] The nucleic acid according to claim 50, wherein the nucleic acid comprises a nucleic acid according to SEQ ID 125.
- [053] A vector comprising a nucleic acid according to claim 50.
- [054] The vector according to claim 53, wherein the vector is selected from the group consisting of a knock-out gene construct, a plasmid, a shuttle vector, a phagemid, a cosmid, a viral vector, and an expression vector.
- [055] A cell comprising the nucleic acid according to claim 50.
- [056] A cell comprising the vector according to claim 53.
- [057] The cell according to claim 56, wherein the cell is a transgenic embryonic non-human stem cell.
- [058] A transgenic non-human mammal comprising the nucleic acid according to claim 50.

- [059] An antibody or an antibody fragment thereof, wherein the antibody is directed against the polypeptide according to claim 48 or against the nucleic acid according to claim 50.
- [060] A nucleic acid which comprises a nucleic acid having a sequence complementary to the nucleic acid according to claim 50 or a non-functional mutant variant of the nucleic acid according to claim 50.
- [061] The nucleic acid according to claim 60, wherein the nucleic acid having a complementary sequence is an antisense molecule or an RNA interference molecule.
- [062] A vector comprising the nucleic acid according to claim 60.
- [063] The vector according to claim 62, wherein the vector is selected from the group consisting of a plasmid, a shuttle vector, a phagemid, a cosmid, a viral vector, and an expression vector.
- [064] A cell comprising the nucleic acid according to claim 62.
- [065] A cell comprising the vector according to claim 64.

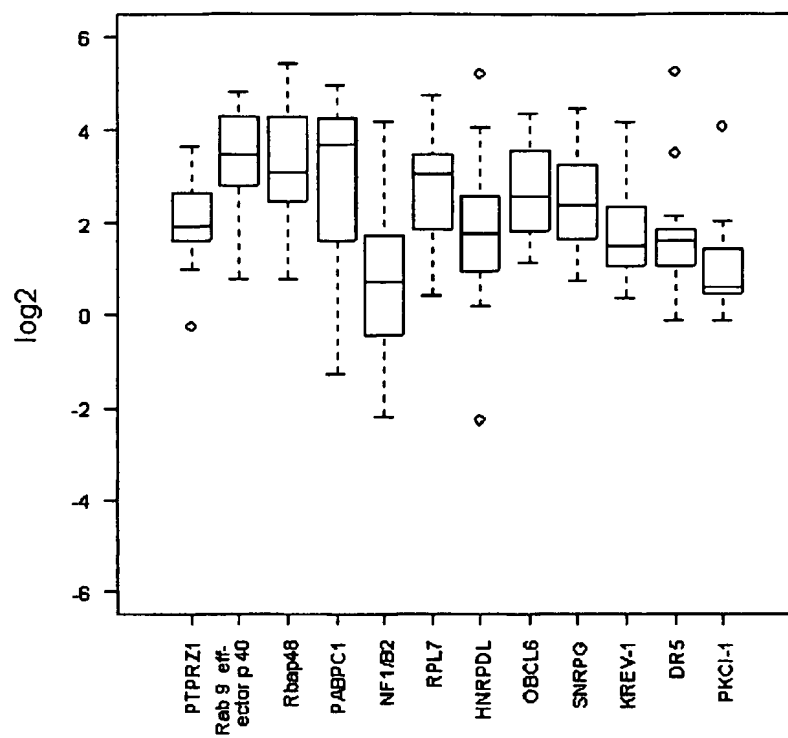
[Fig. 001]



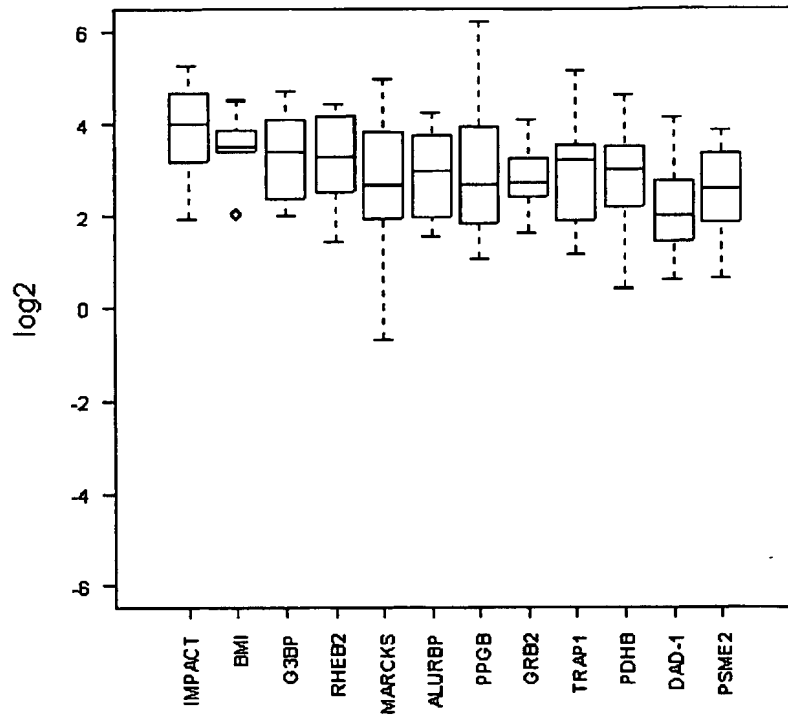
[Fig. 002]



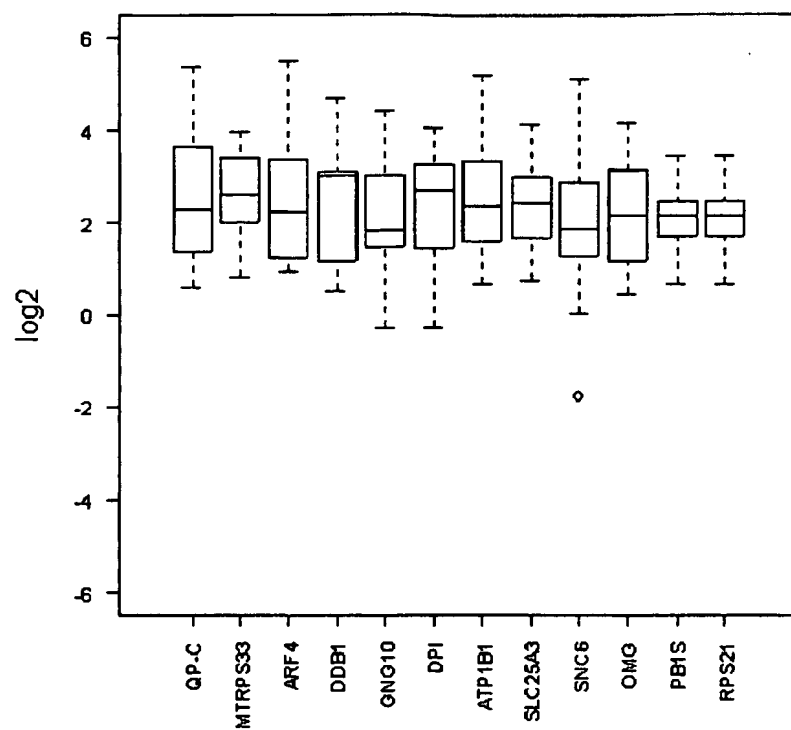
[Fig. 003]



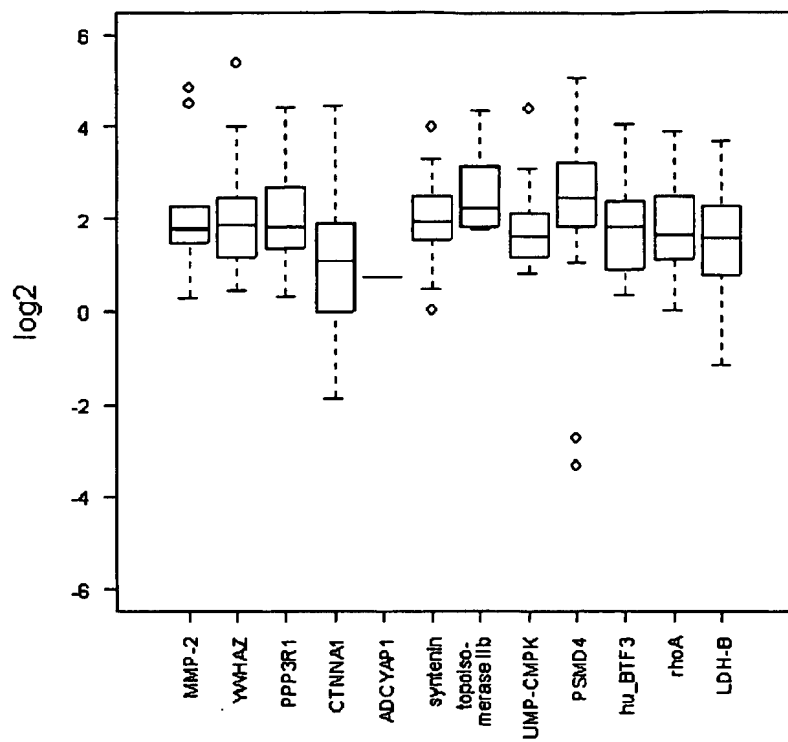
[Fig. 004]



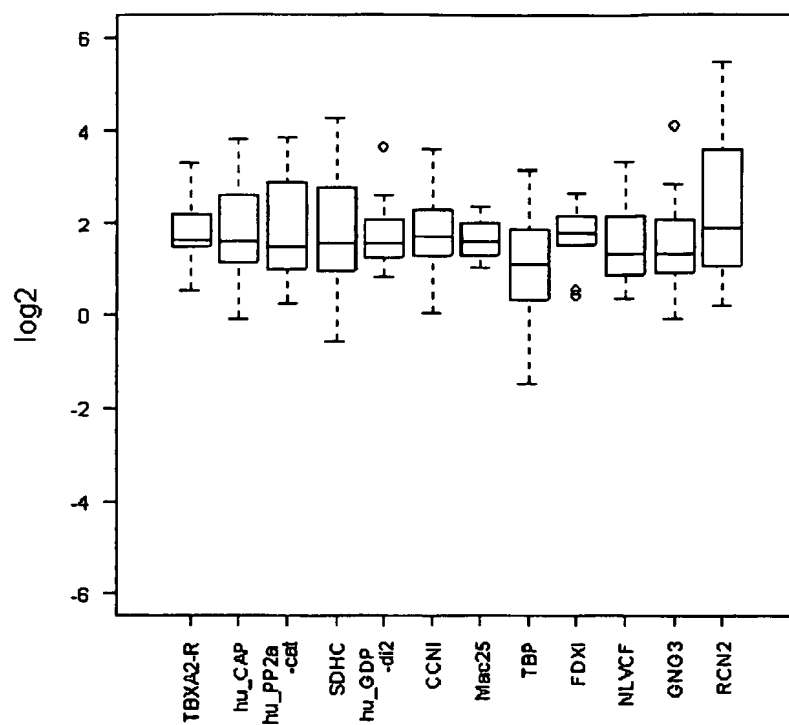
[Fig. 005]



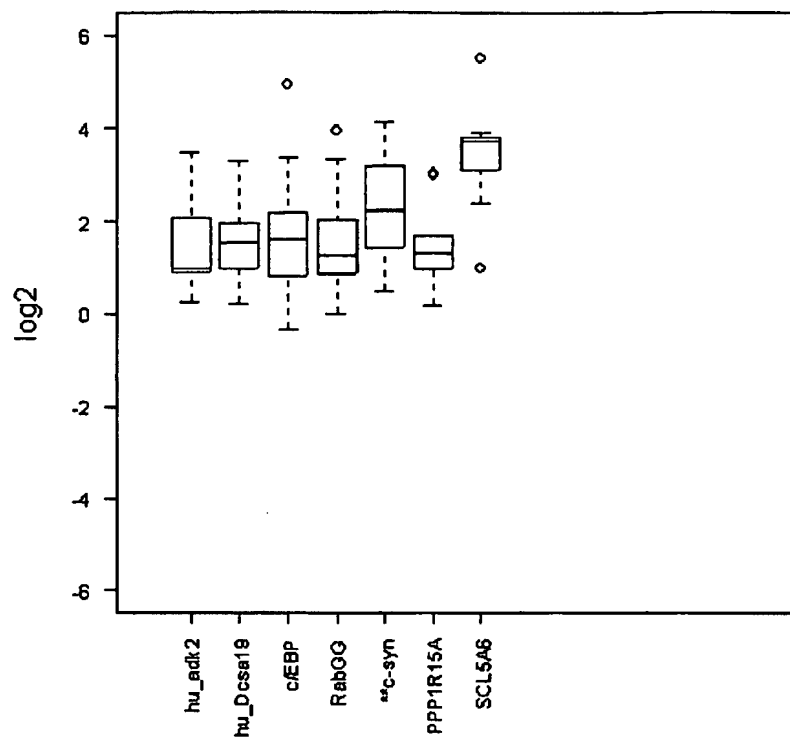
[Fig. 006]



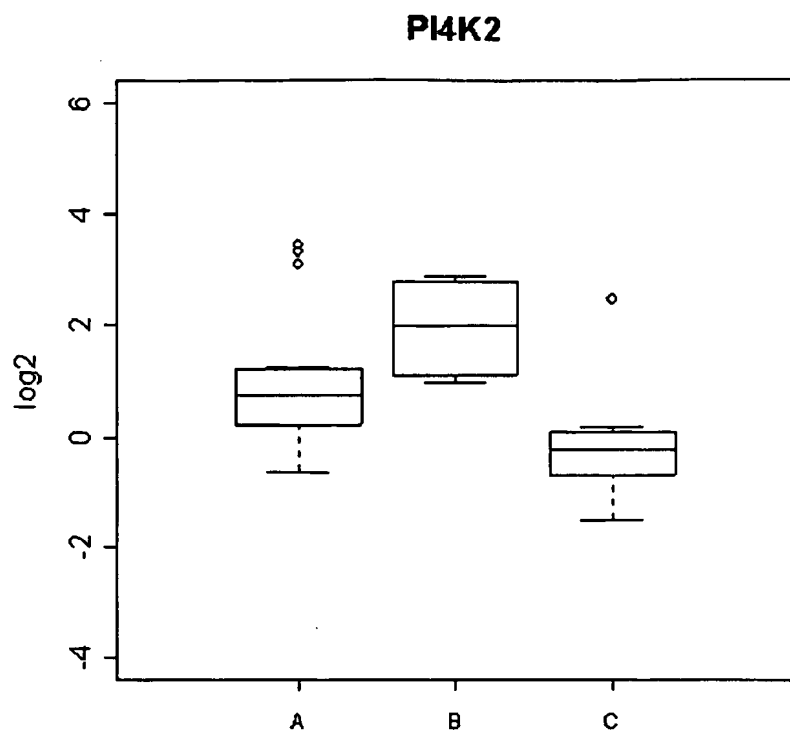
[Fig. 007]



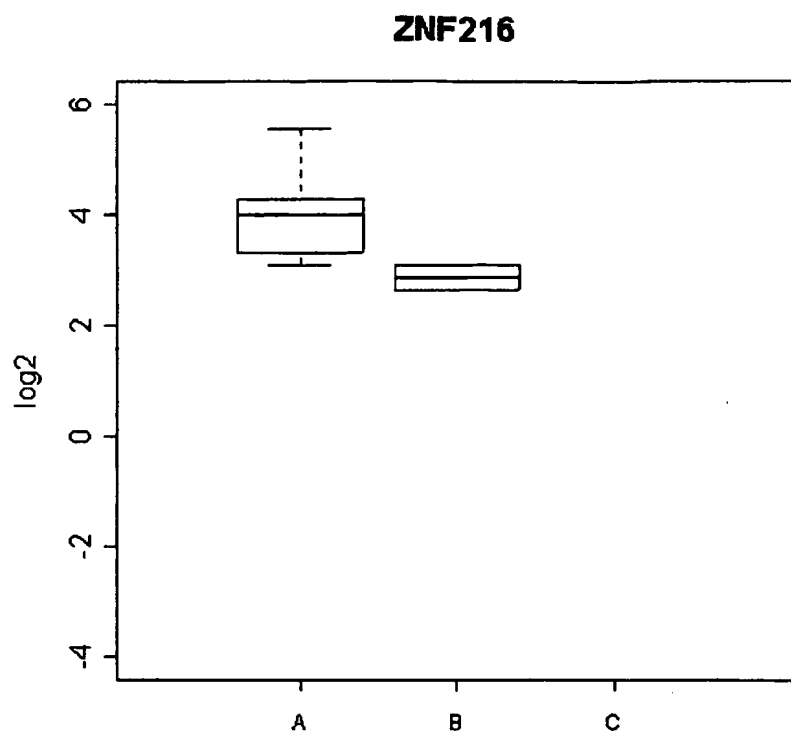
[Fig. 008]



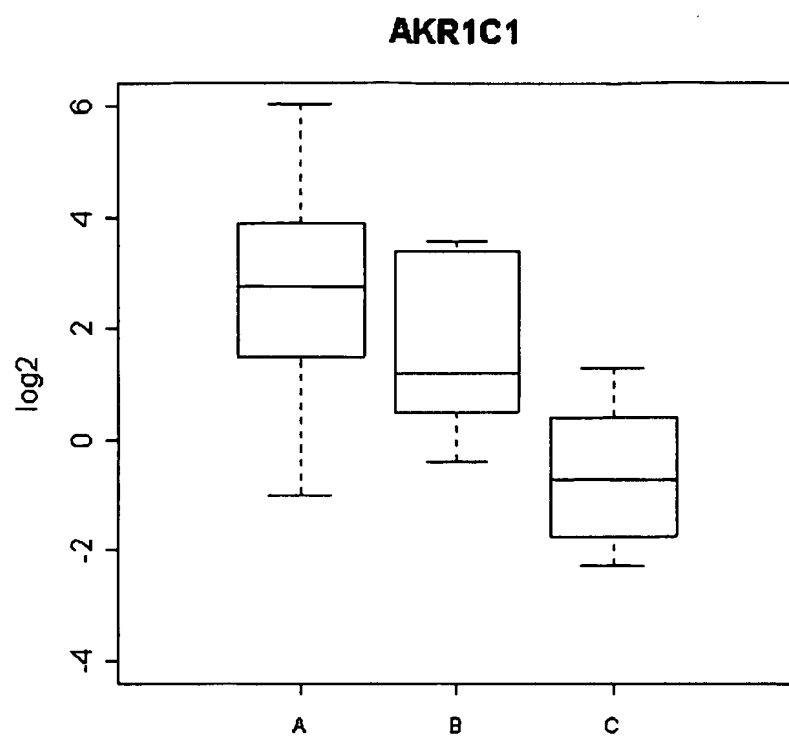
[Fig. 009]



[Fig. 010]

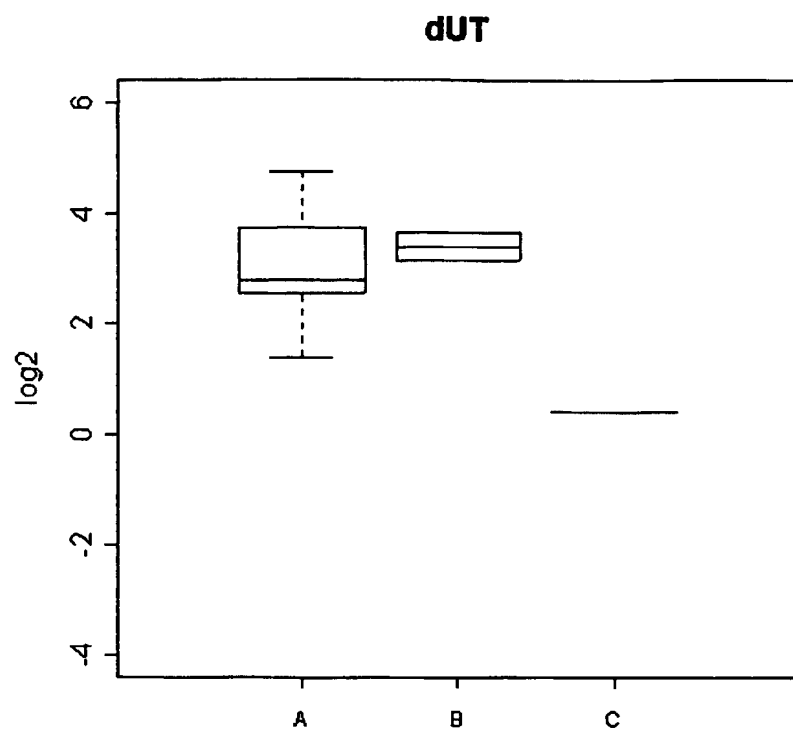


[Fig. 011]

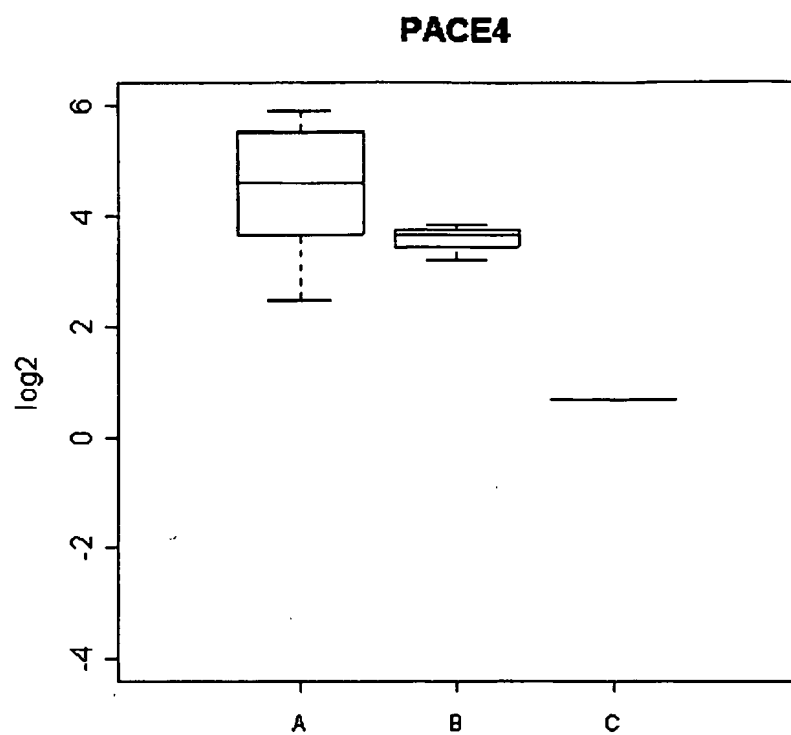


12/106

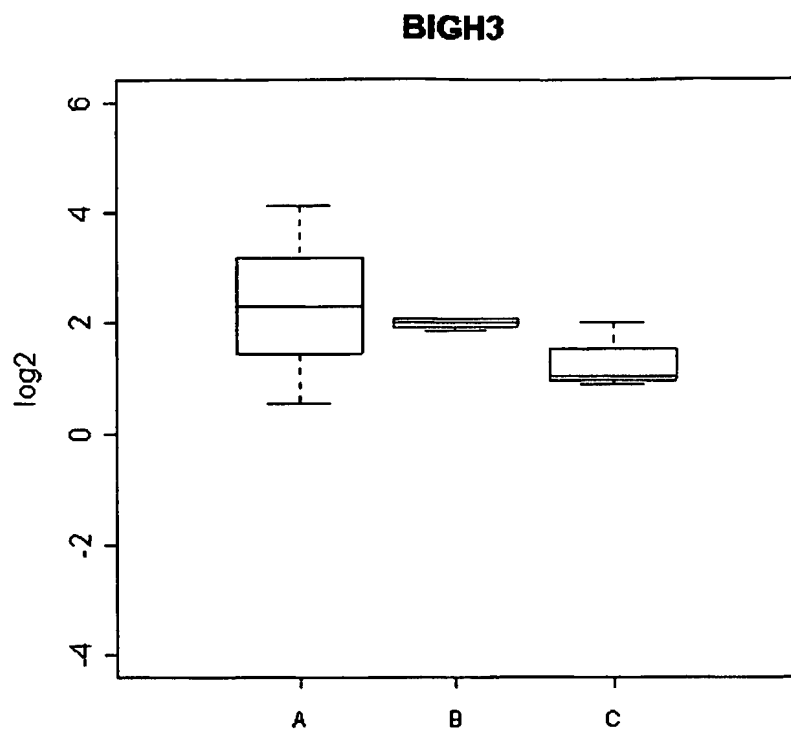
[Fig. 012]



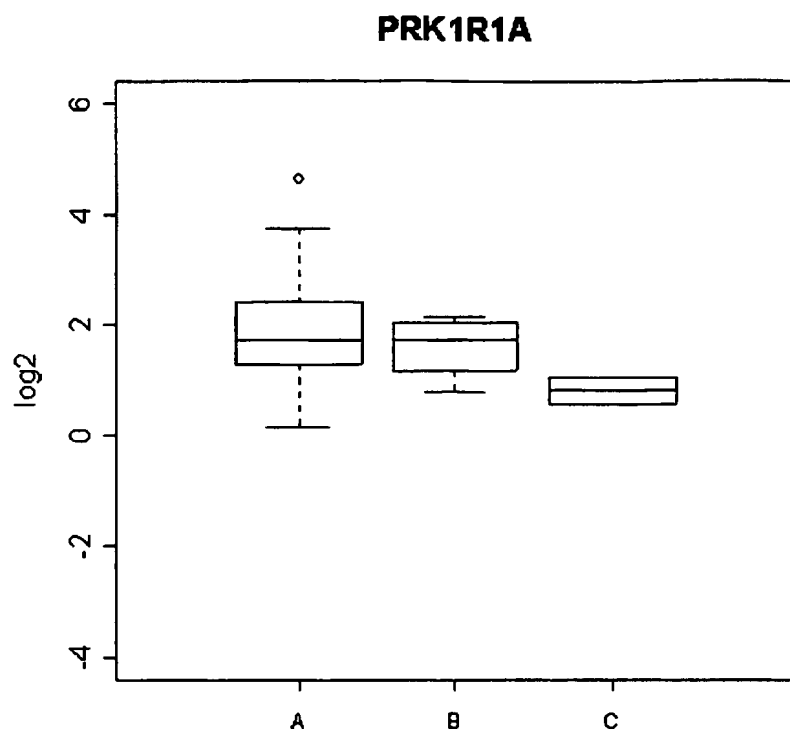
[Fig. 013]



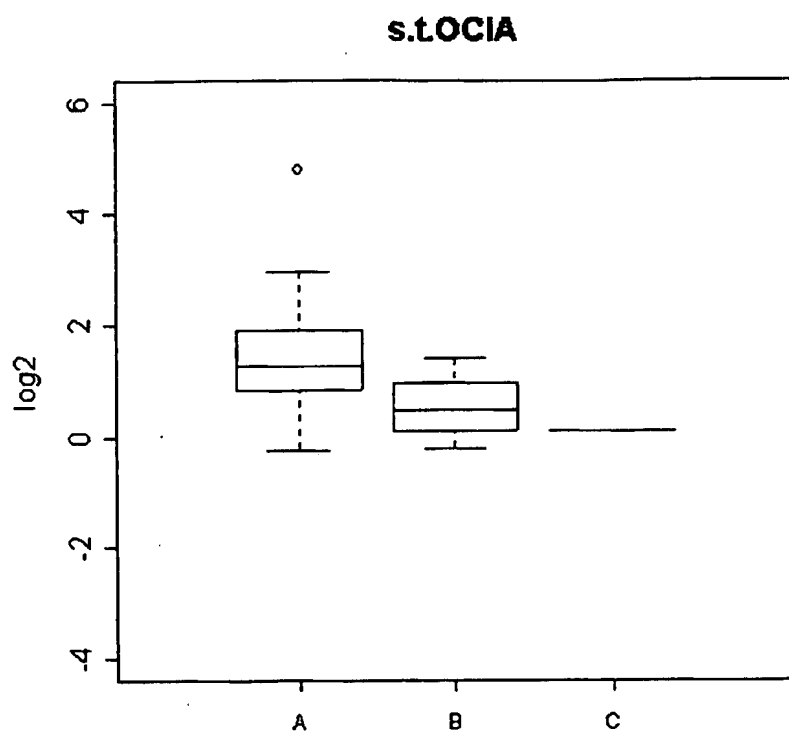
[Fig. 014]



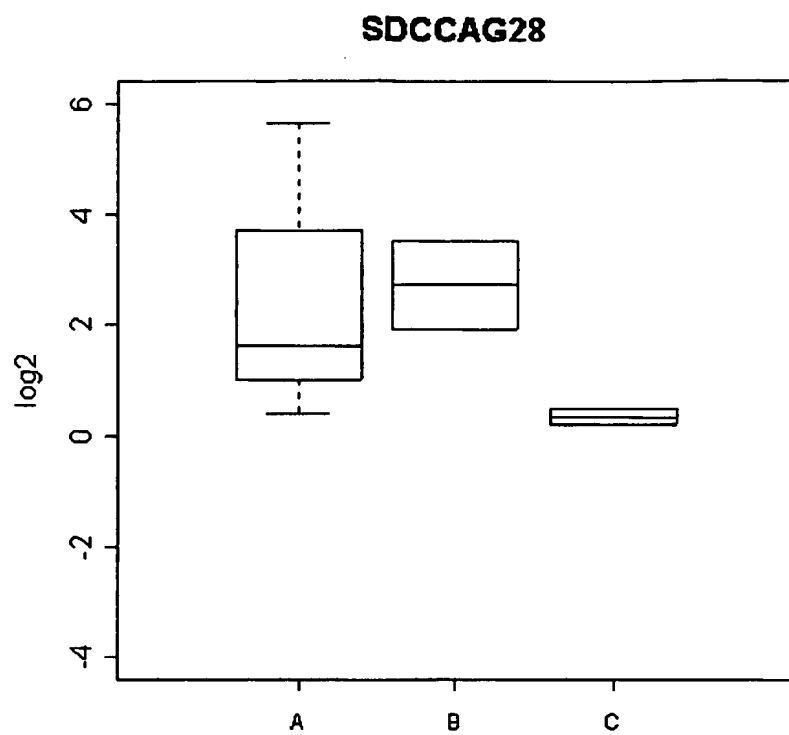
[Fig. 015]



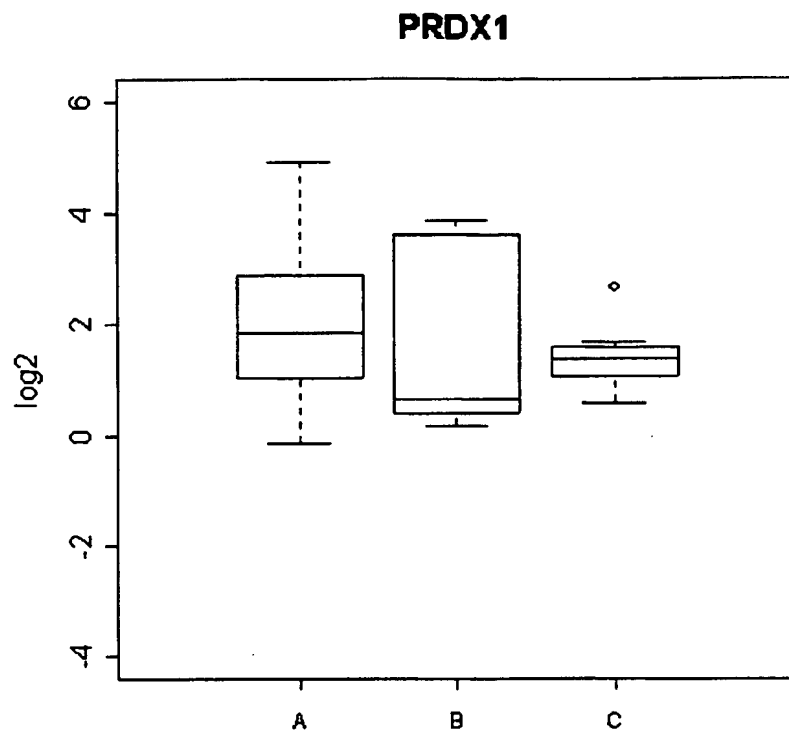
[Fig. 016]



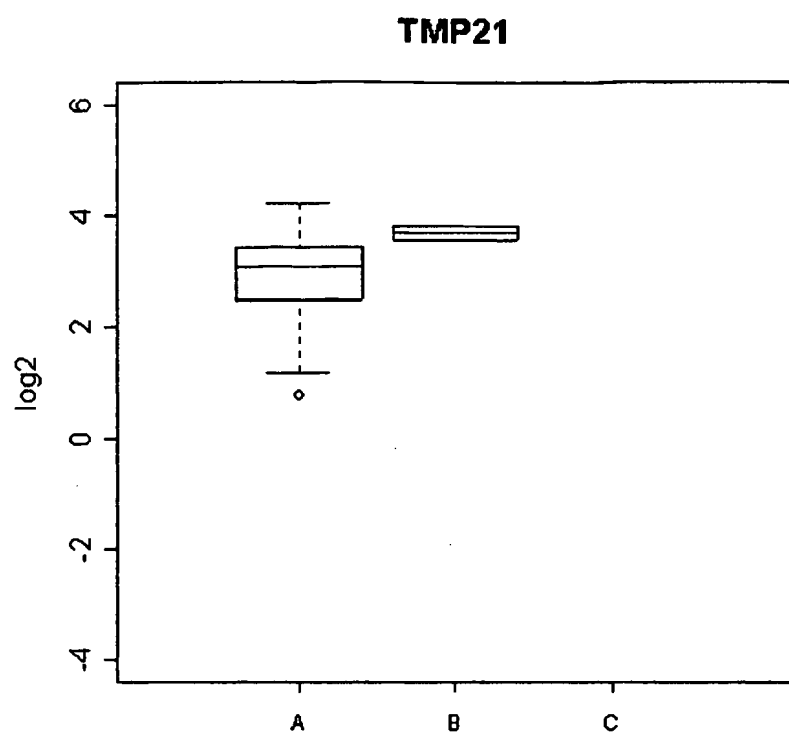
[Fig. 017]



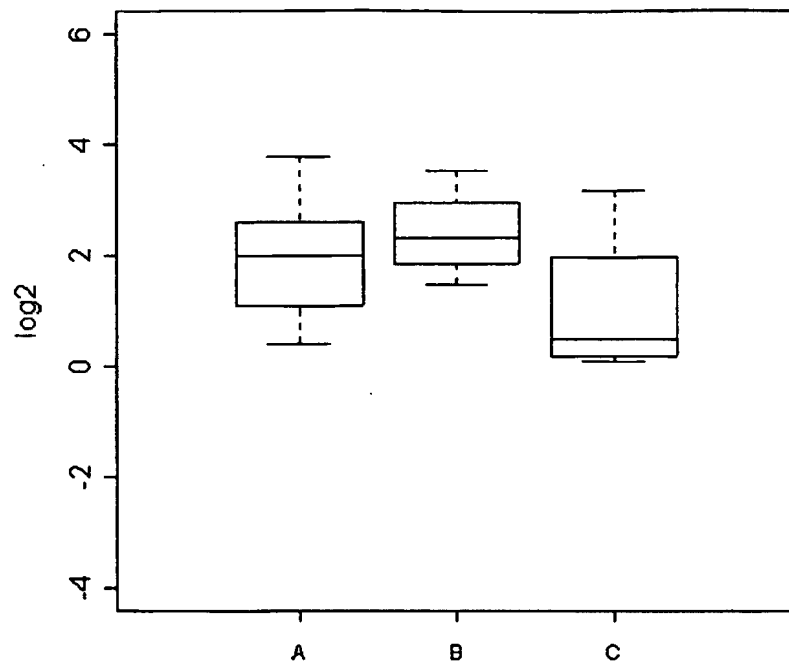
[Fig. 018]



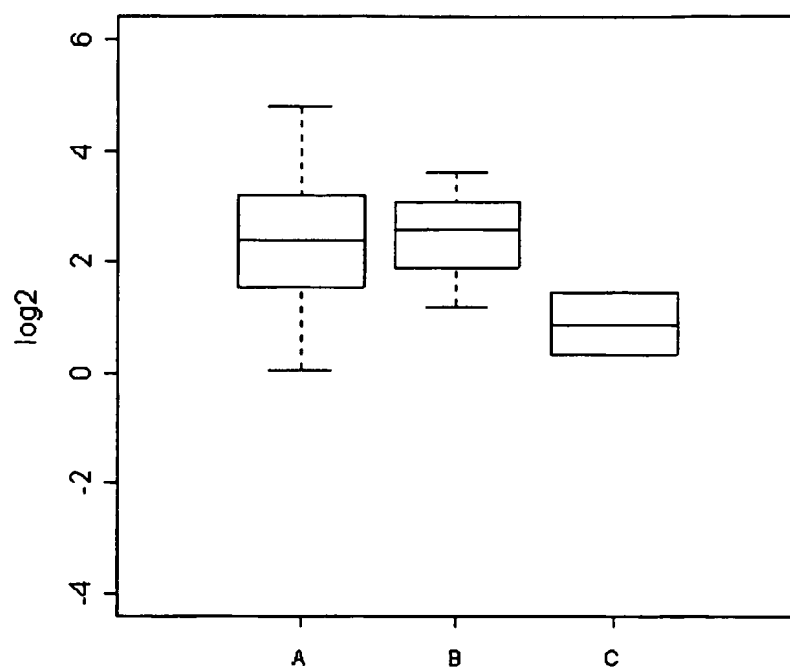
[Fig. 019]



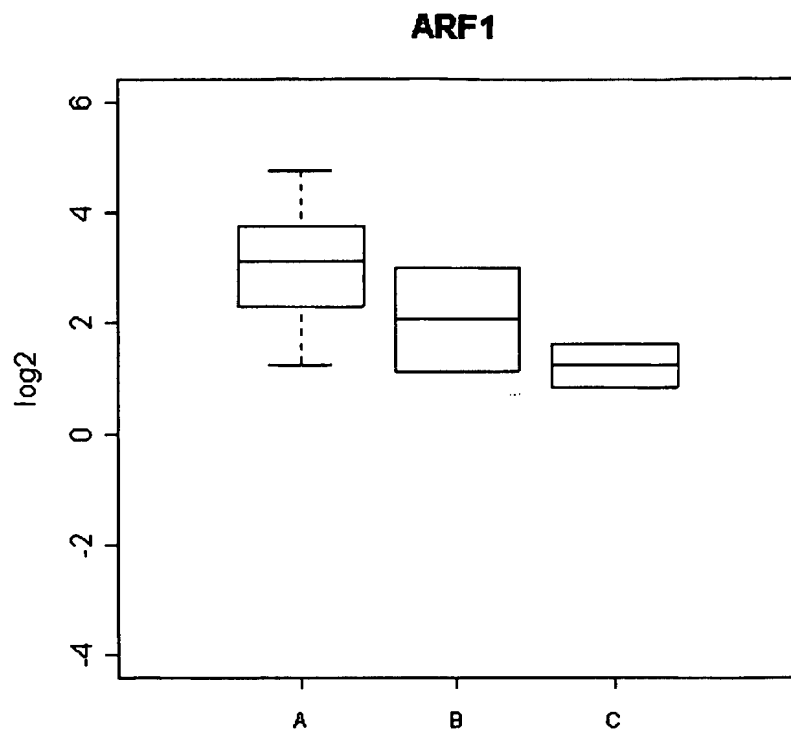
[Fig. 020]

IQGAP2

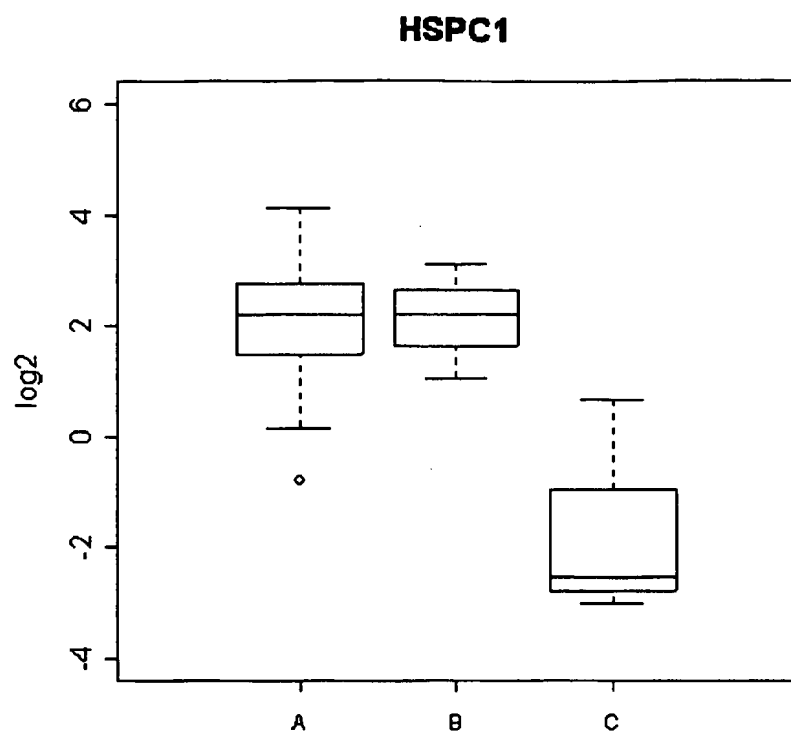
[Fig. 021]

Rab2

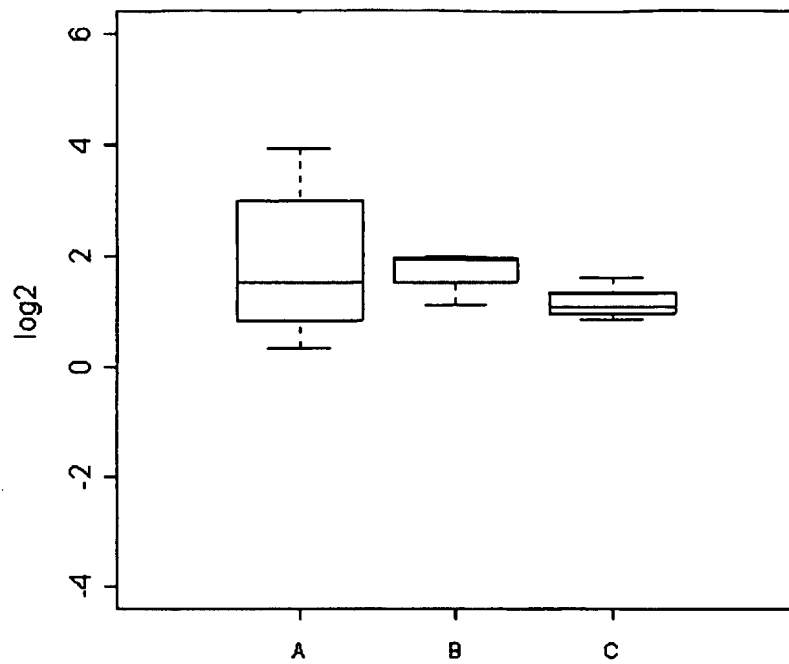
[Fig. 022]



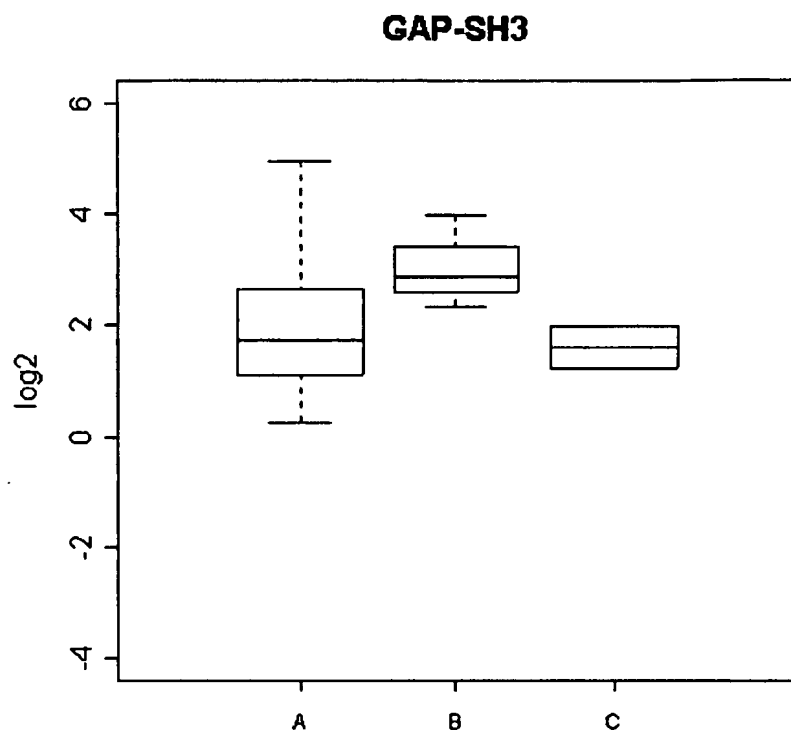
[Fig. 023]



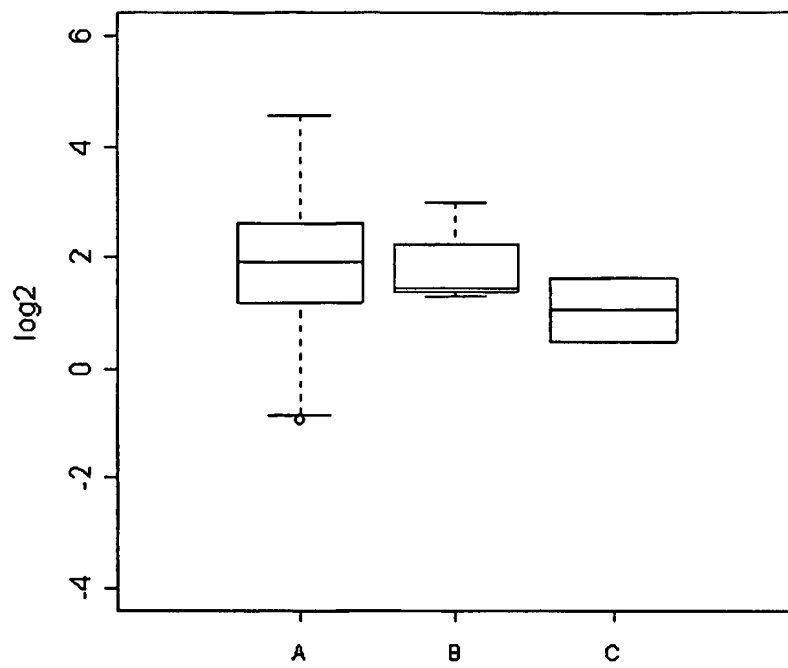
[Fig. 024]

TLR5

[Fig. 025]

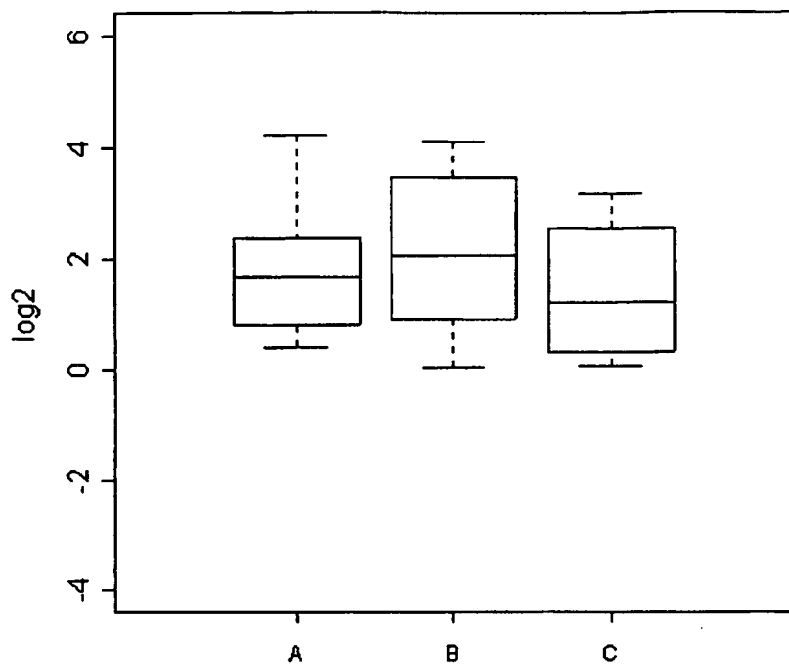


[Fig. 026]

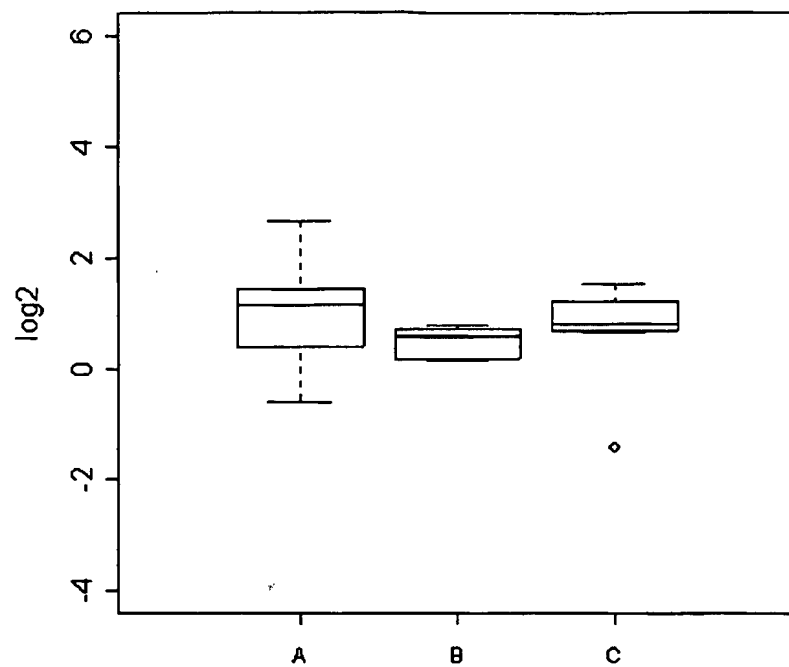
Crisp-3

27/106

[Fig. 027]

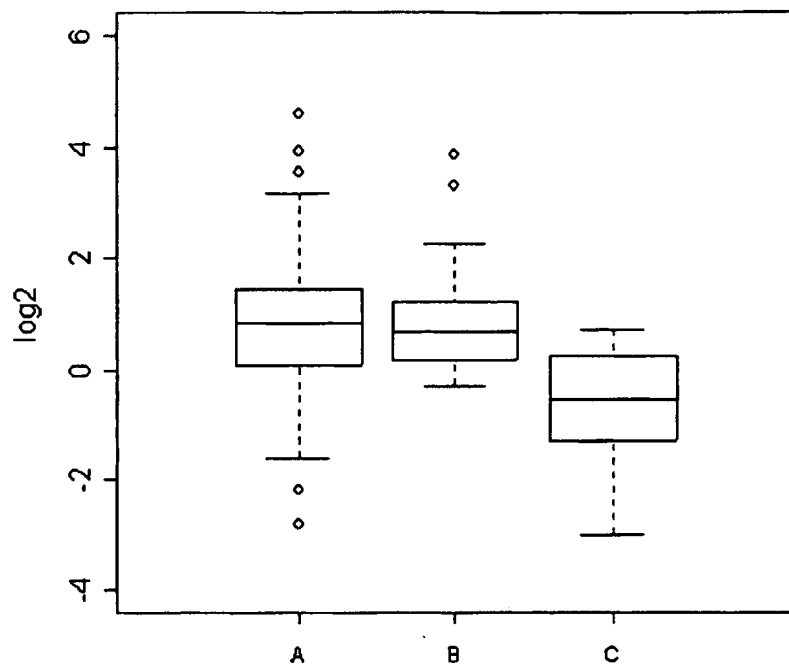
TM4SF4

[Fig. 028]

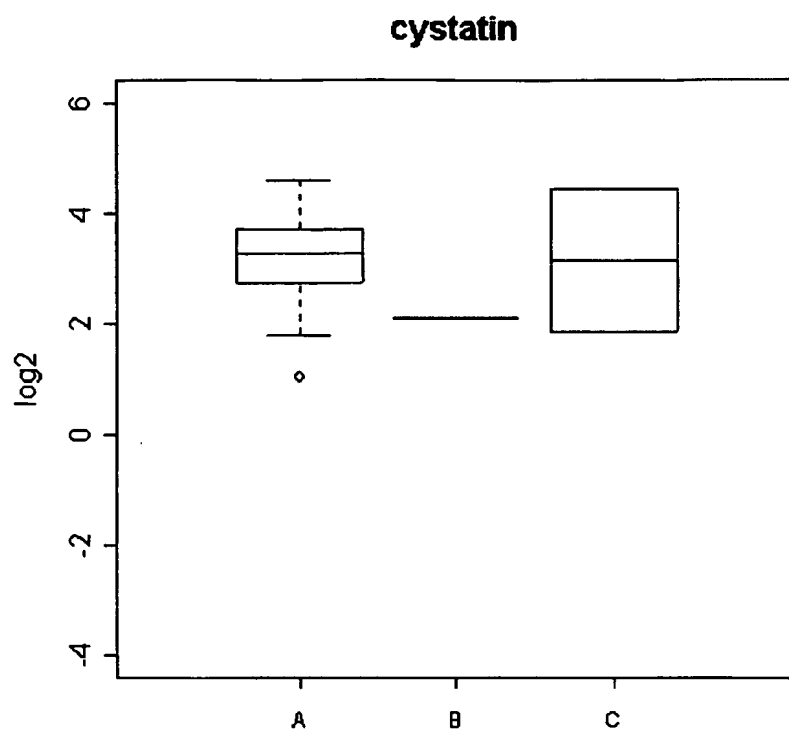
AQP9

29/106

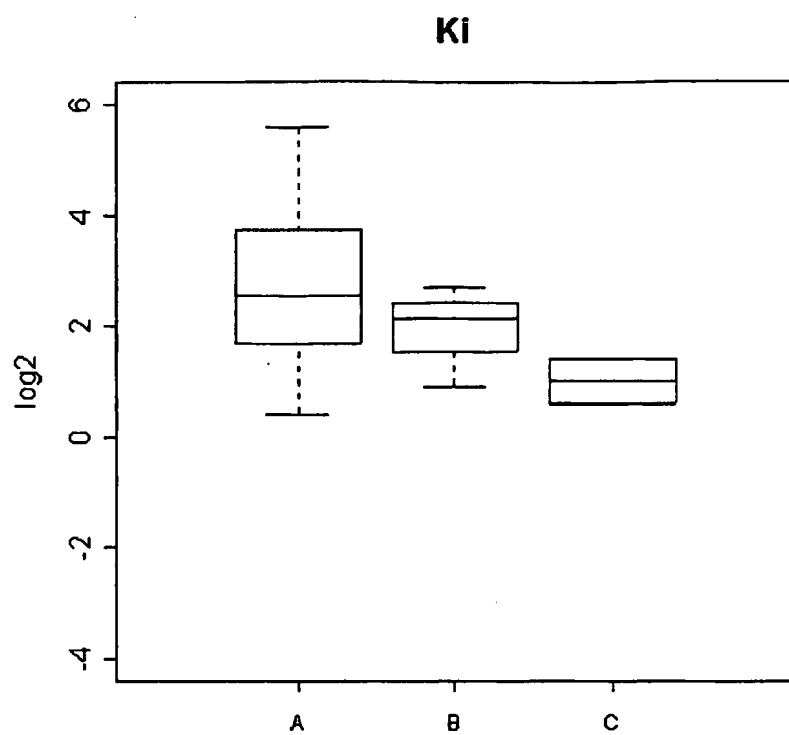
[Fig. 029]

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[Fig. 030]

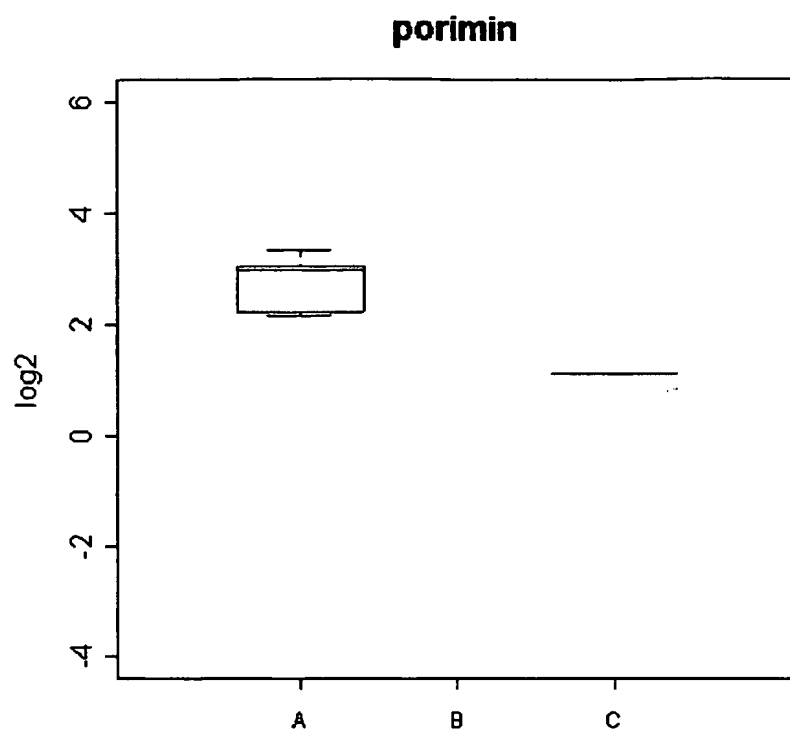


[Fig. 031]

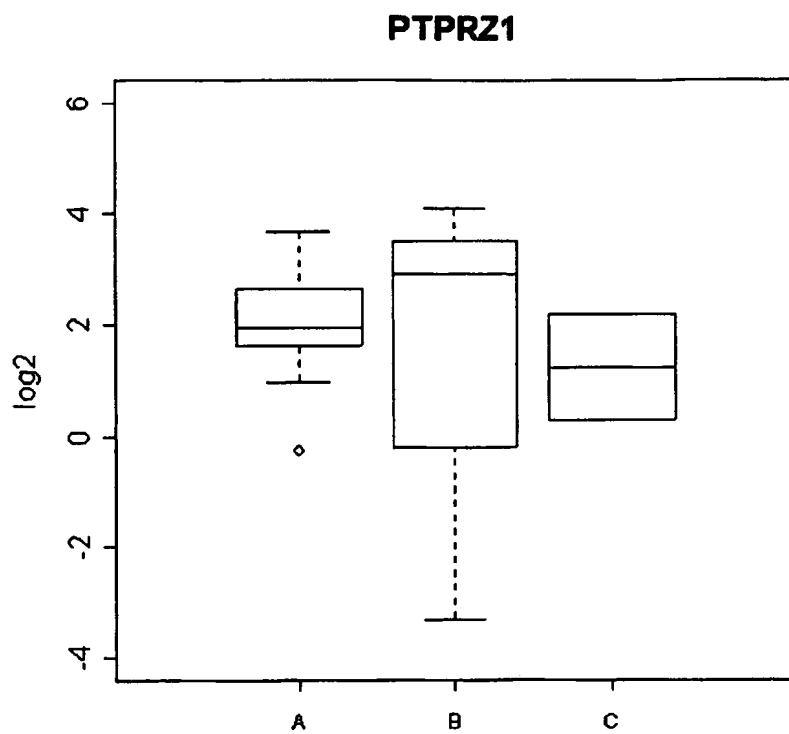


32/106

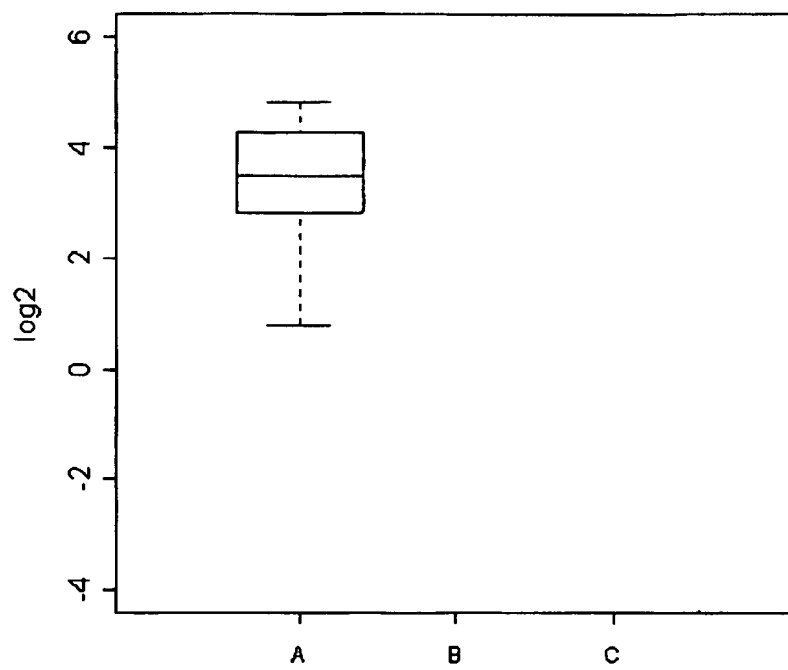
[Fig. 032]



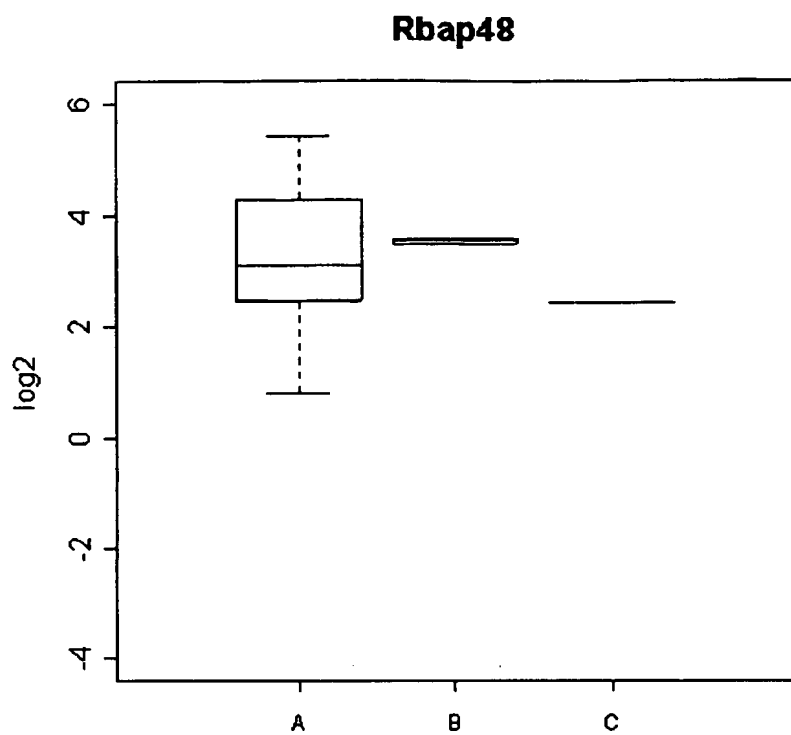
[Fig. 033]



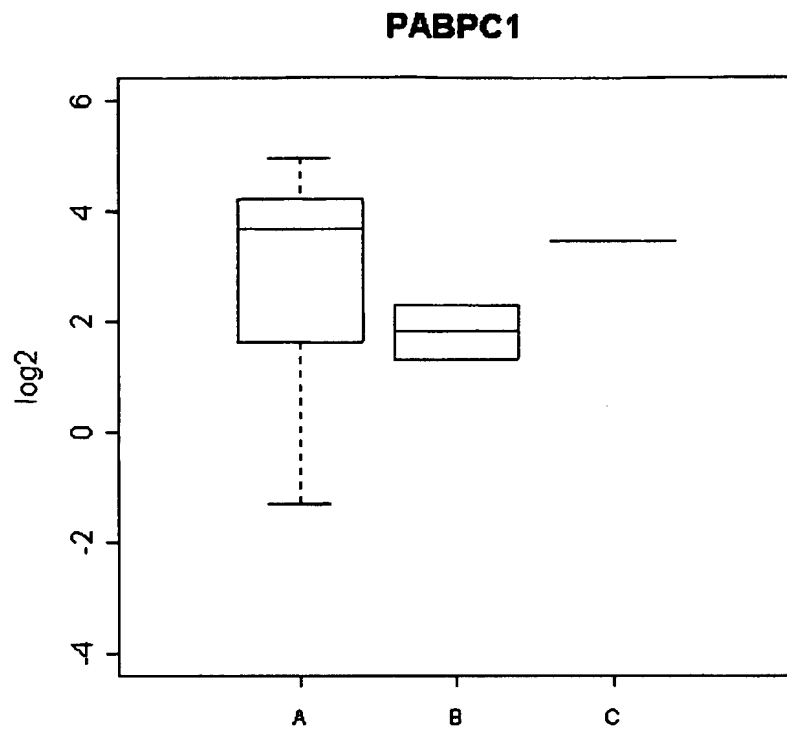
[Fig. 034]

Rab9 effector of p40

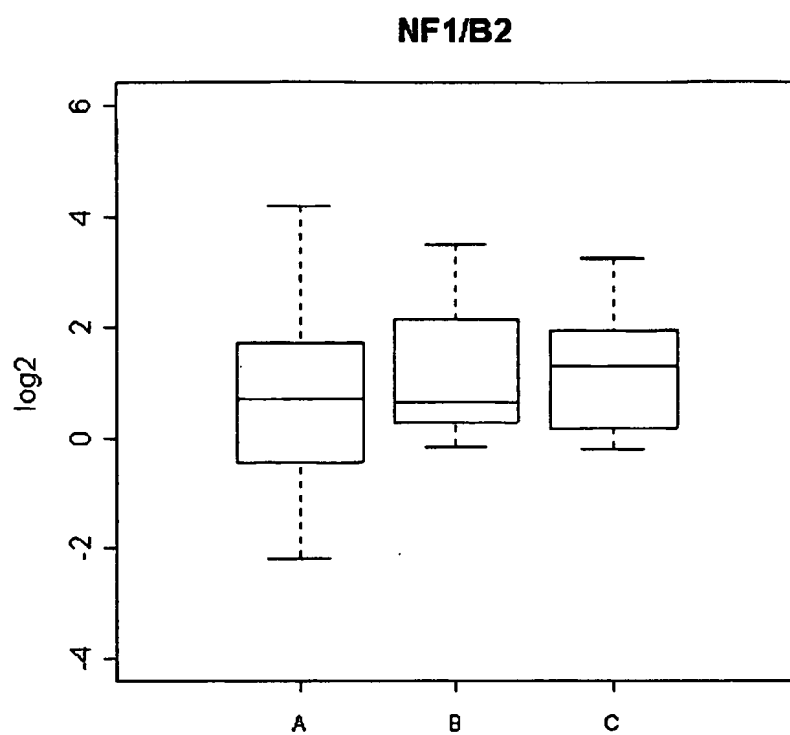
[Fig. 035]



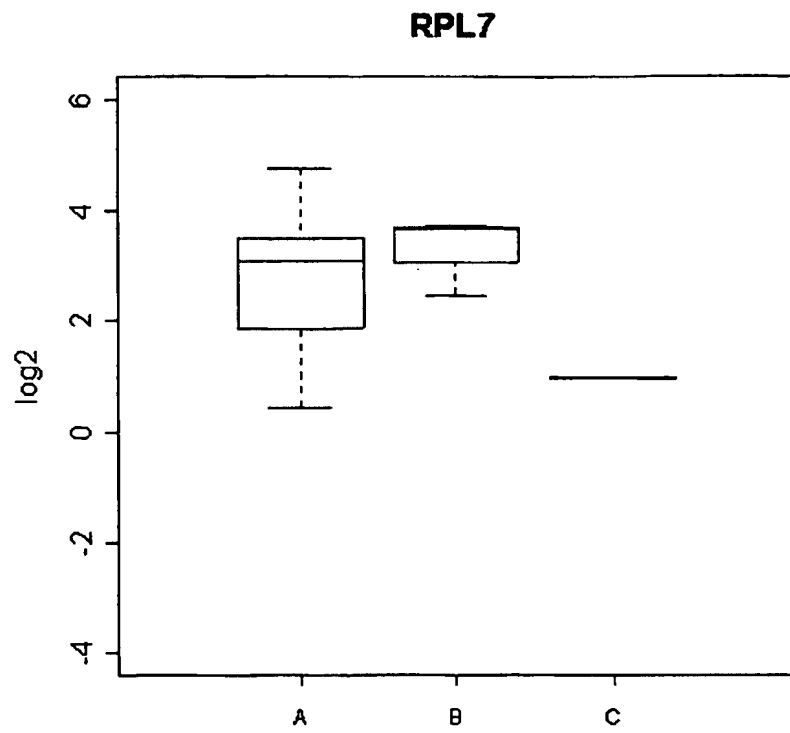
[Fig. 036]



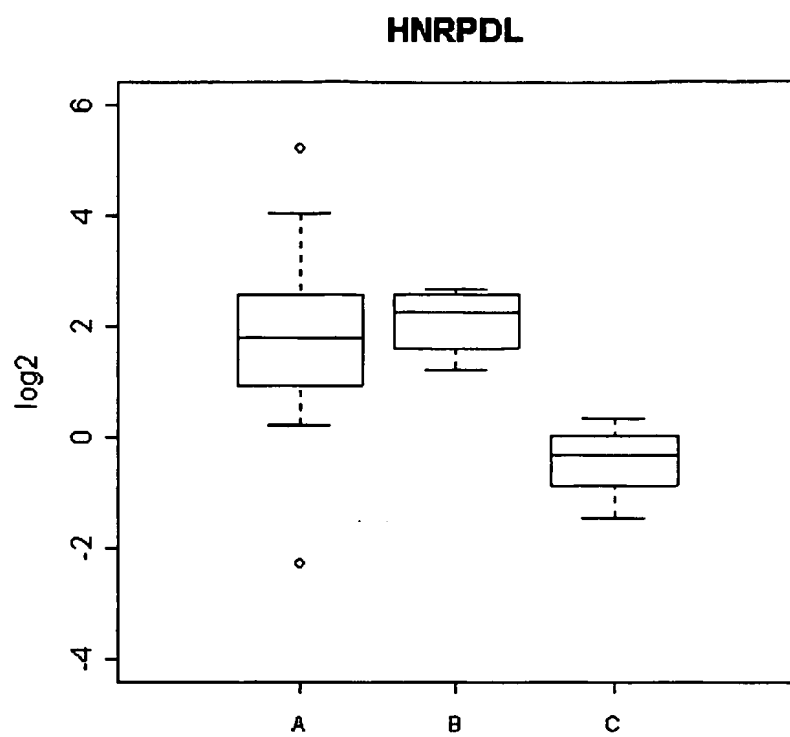
[Fig. 037]



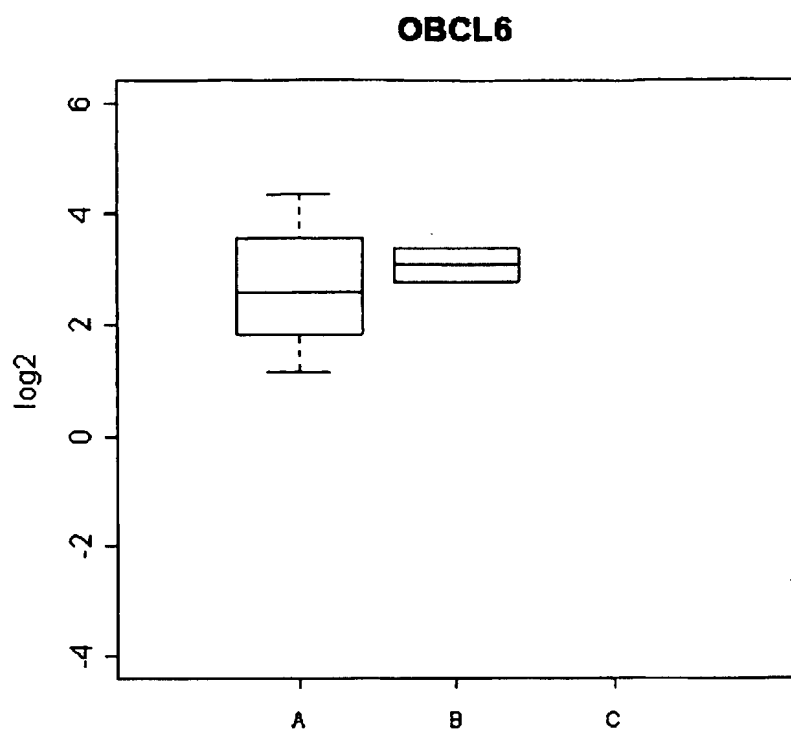
[Fig. 038]



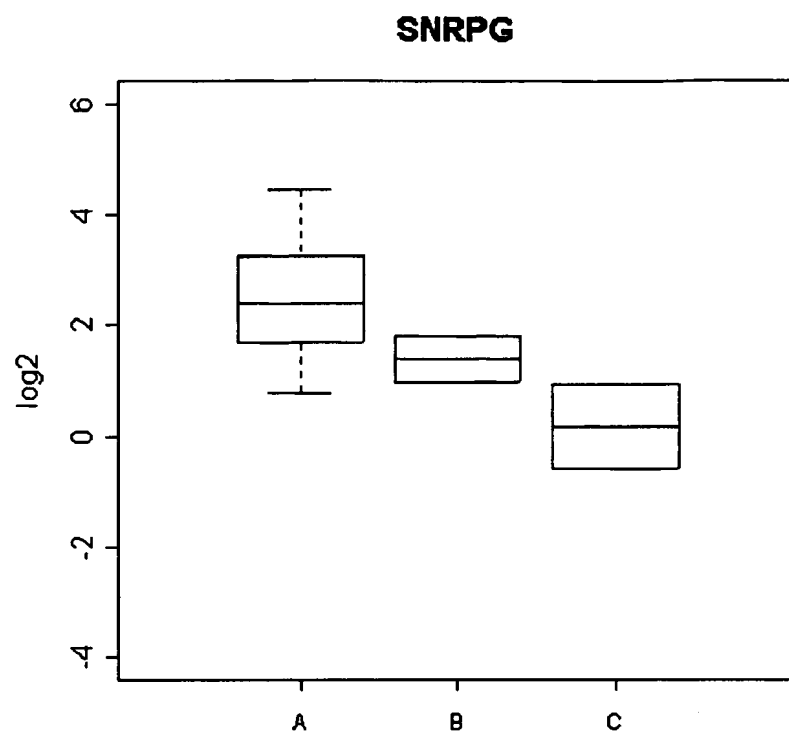
[Fig. 039]



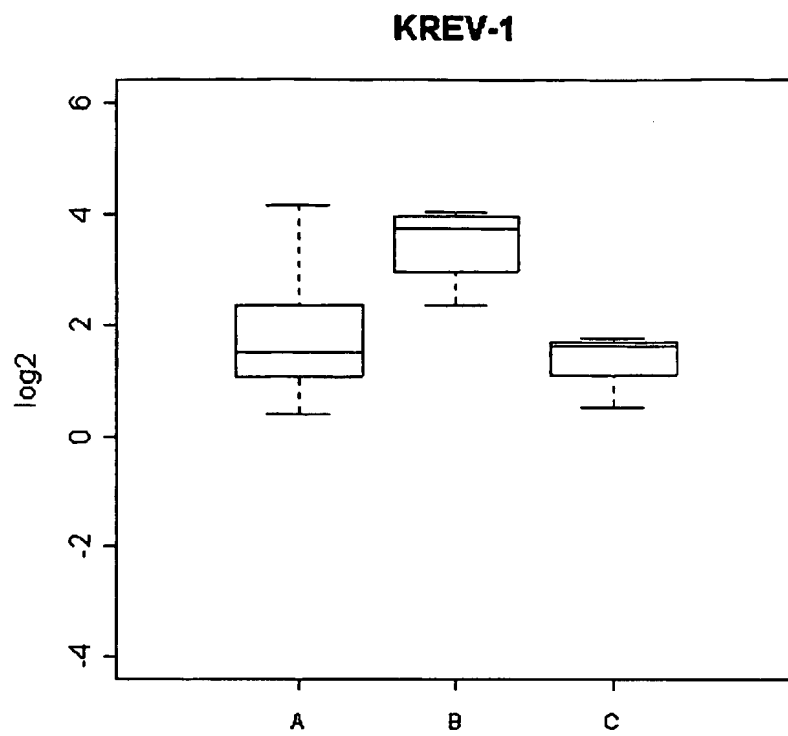
[Fig. 040]



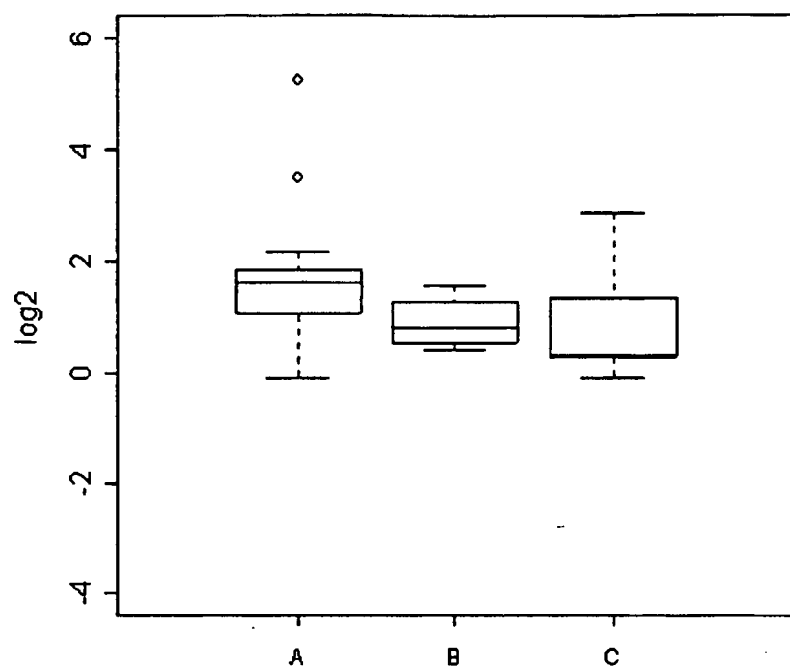
[Fig. 041]



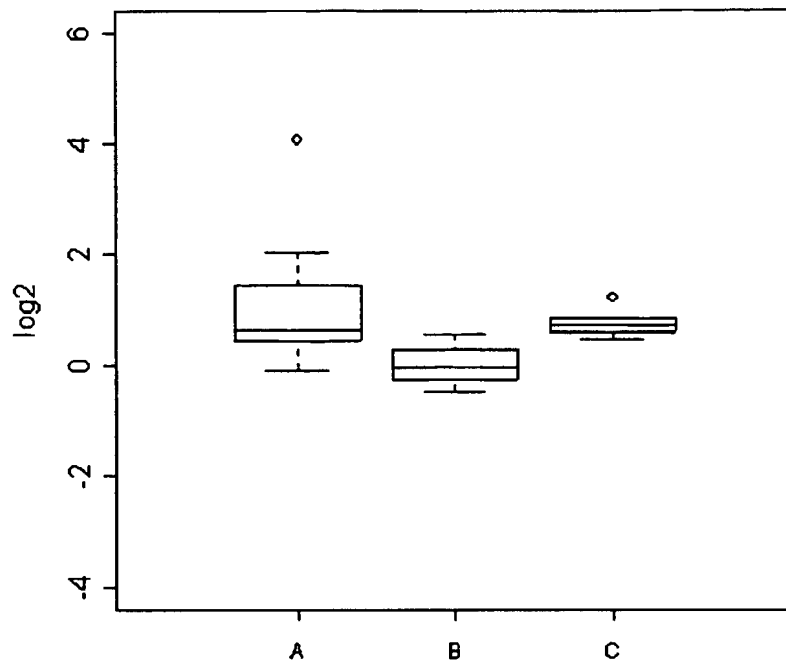
[Fig. 042]



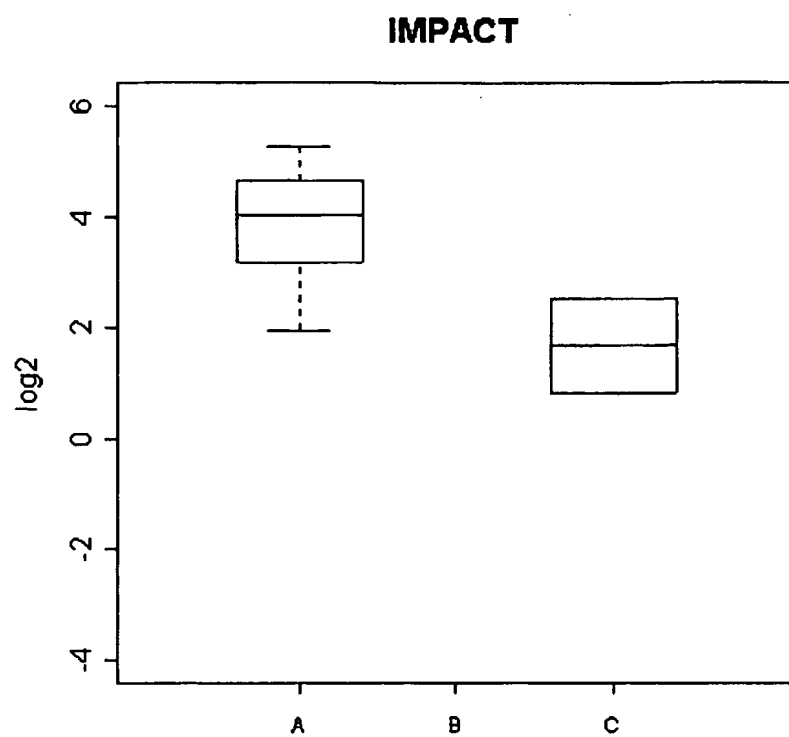
[Fig. 043]

DR5

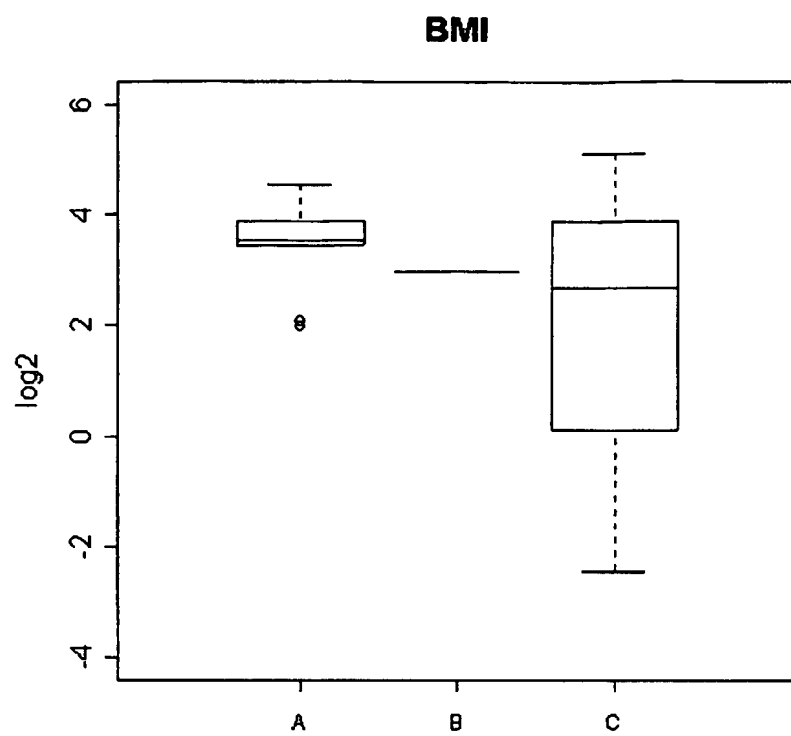
[Fig. 044]

PKCI-1

[Fig. 045]

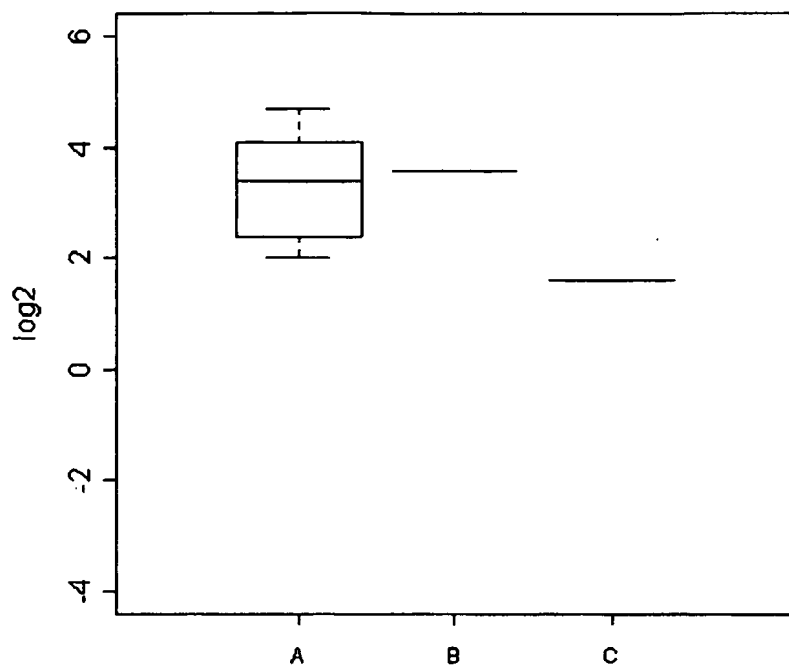


[Fig. 046]

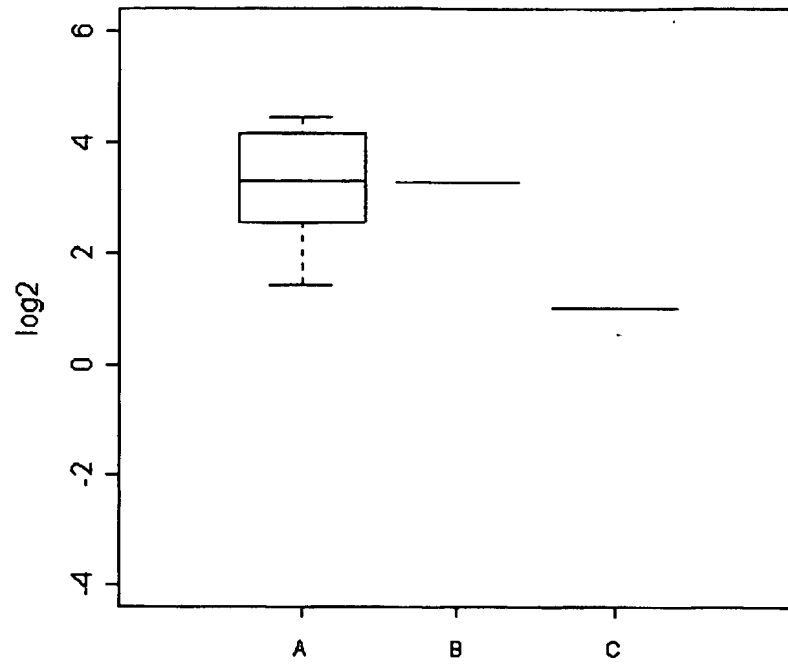


47/106

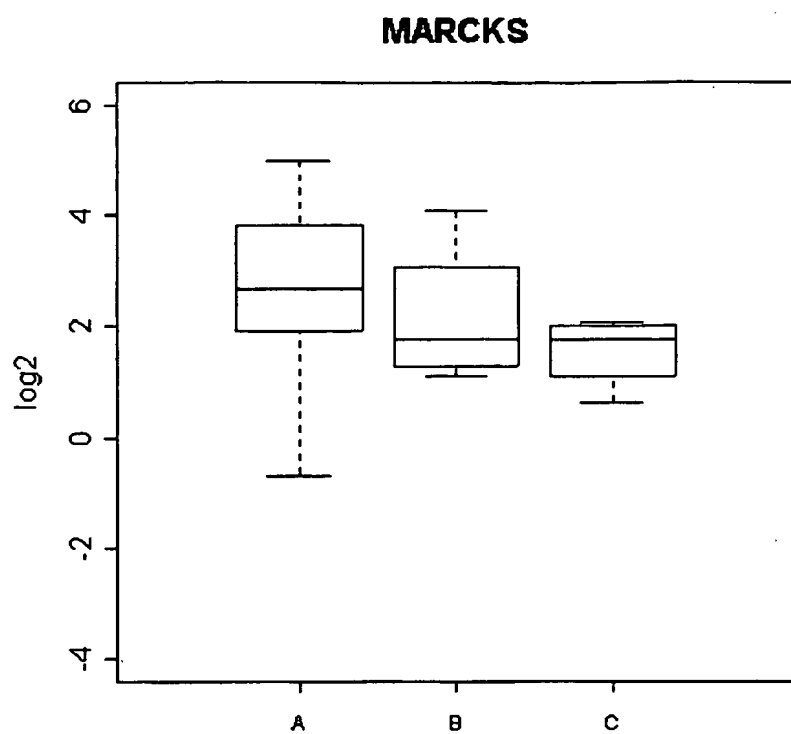
[Fig. 047]

G3BP

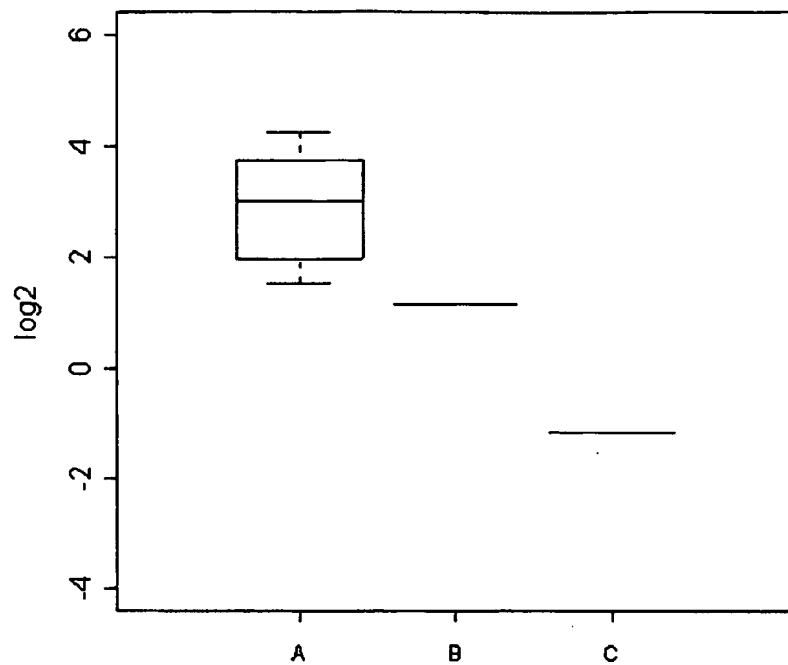
[Fig. 048]

RHEB2

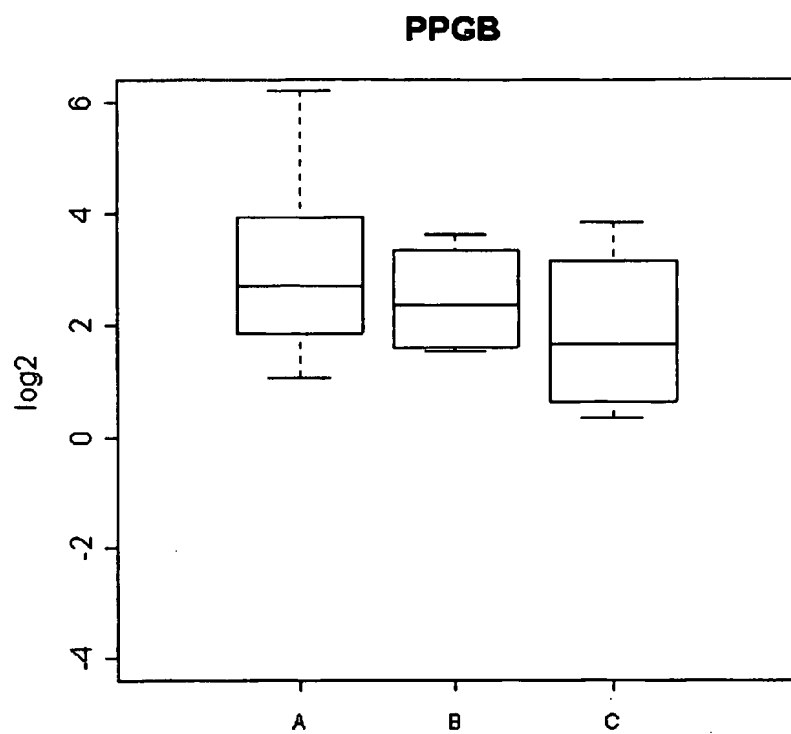
[Fig. 049]



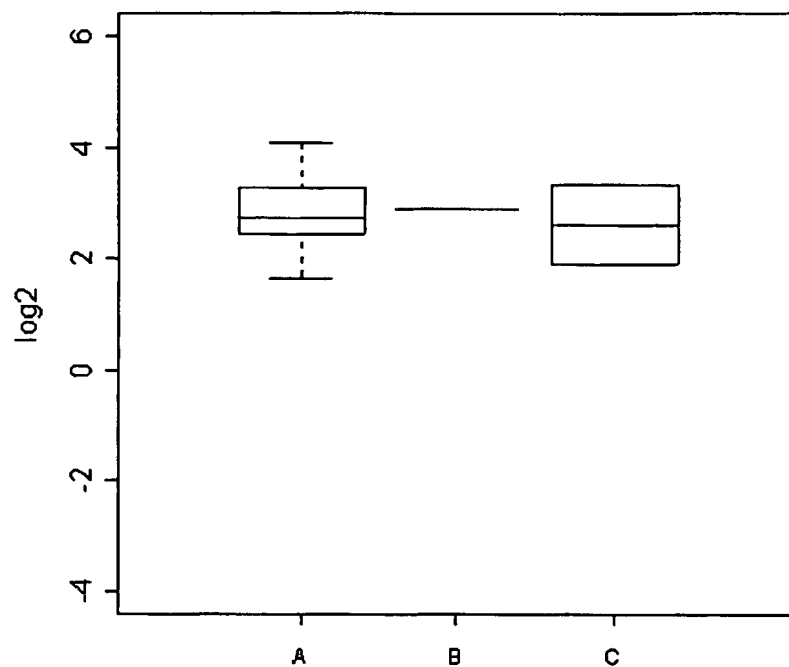
[Fig. 050]

ALURBP

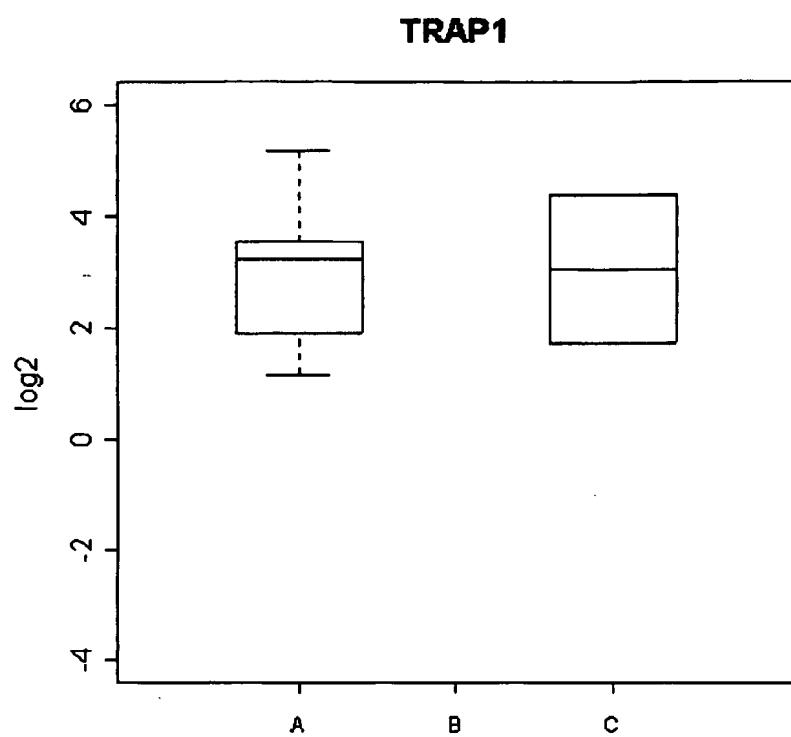
[Fig. 051]



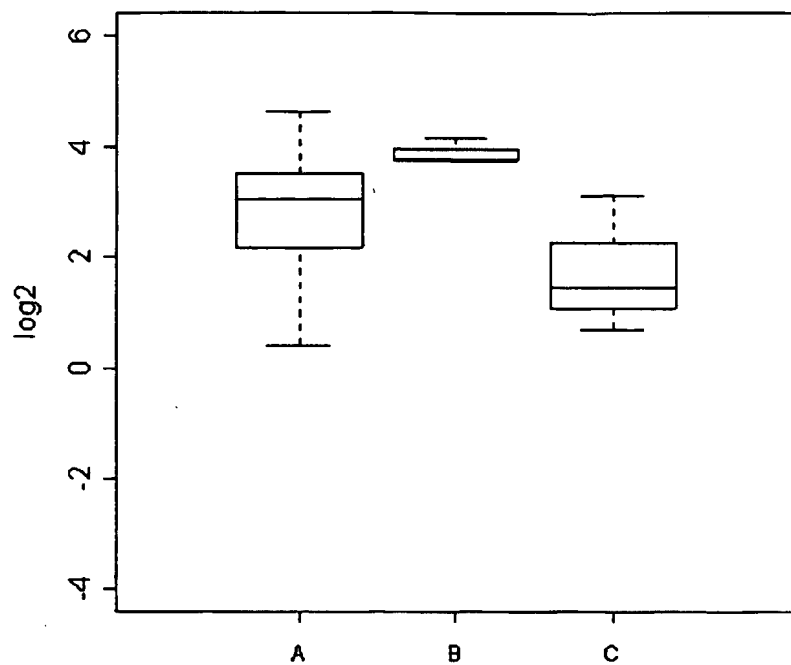
[Fig. 052]

GRB2

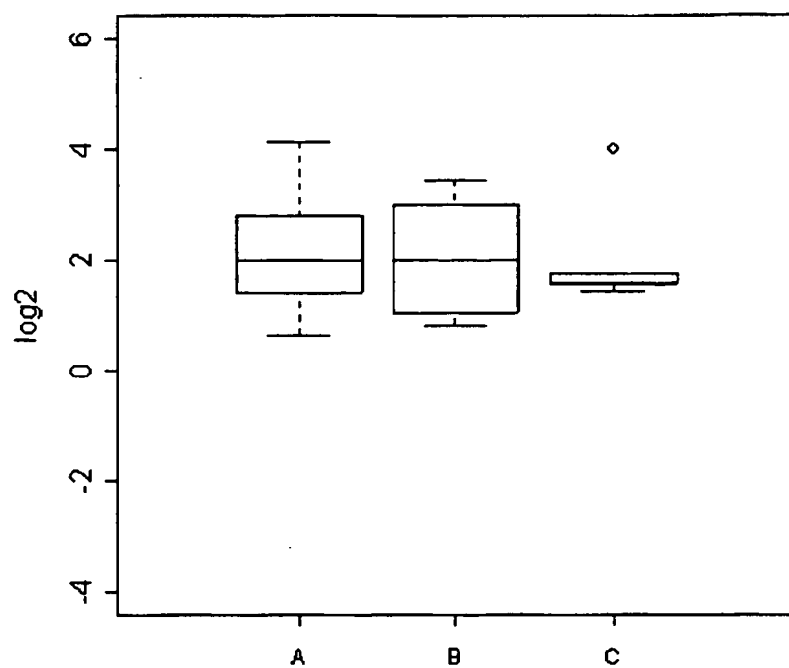
[Fig. 053]



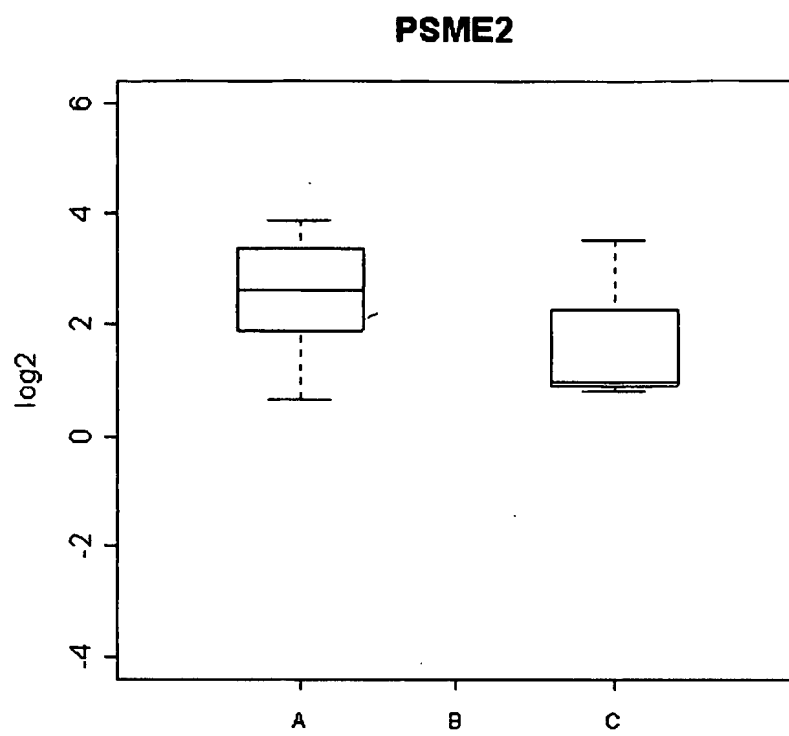
[Fig. 054]

PDHB

[Fig. 055]

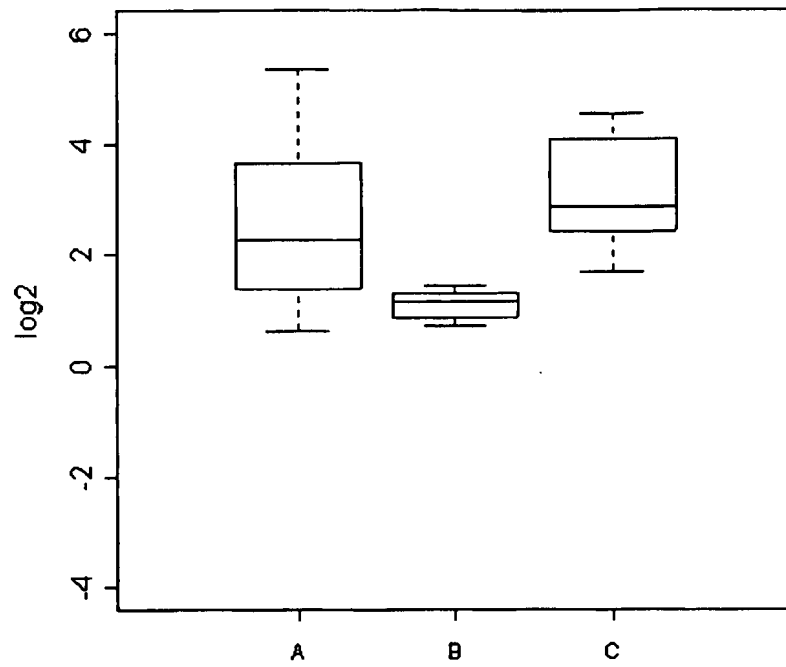
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[Fig. 056]

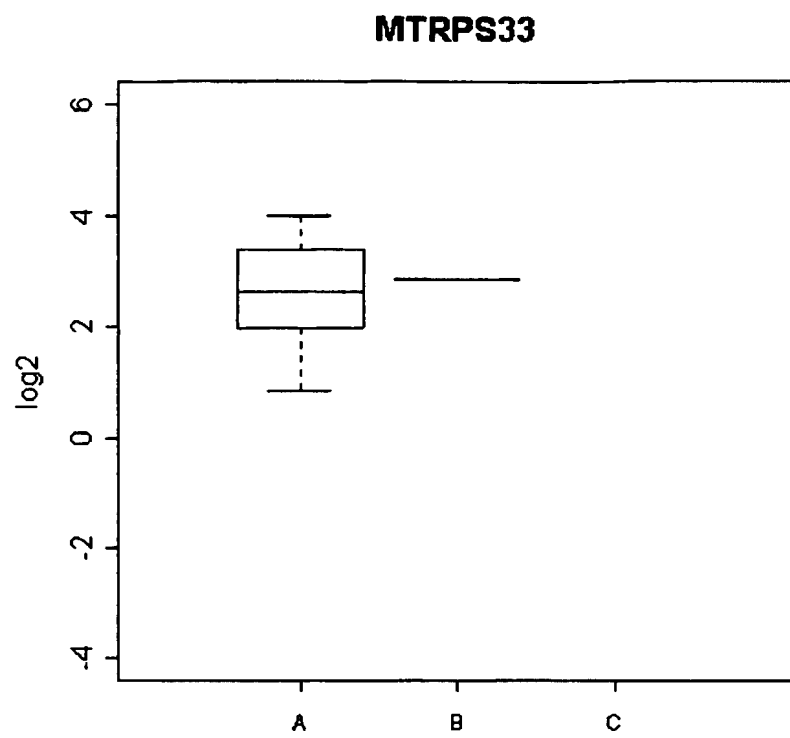


57/106

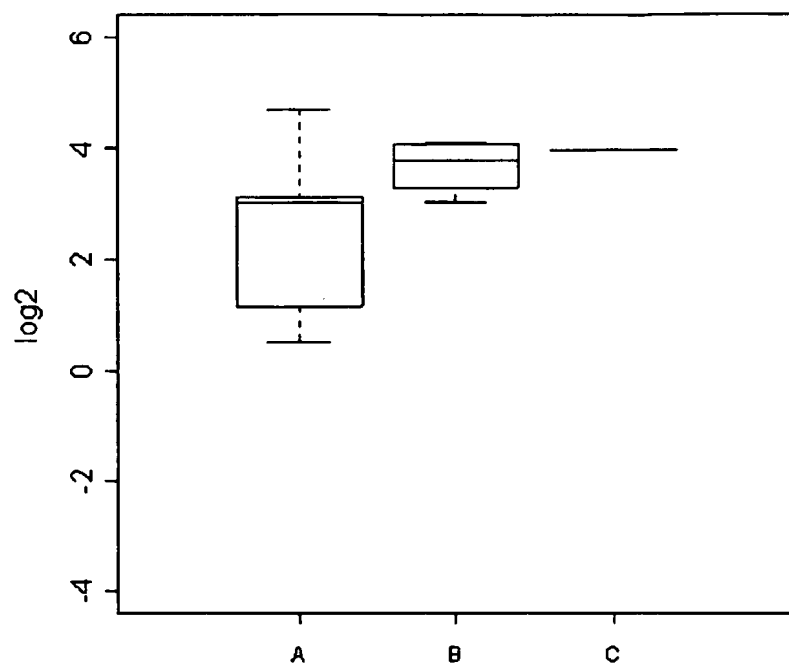
[Fig. 057]

QP-C

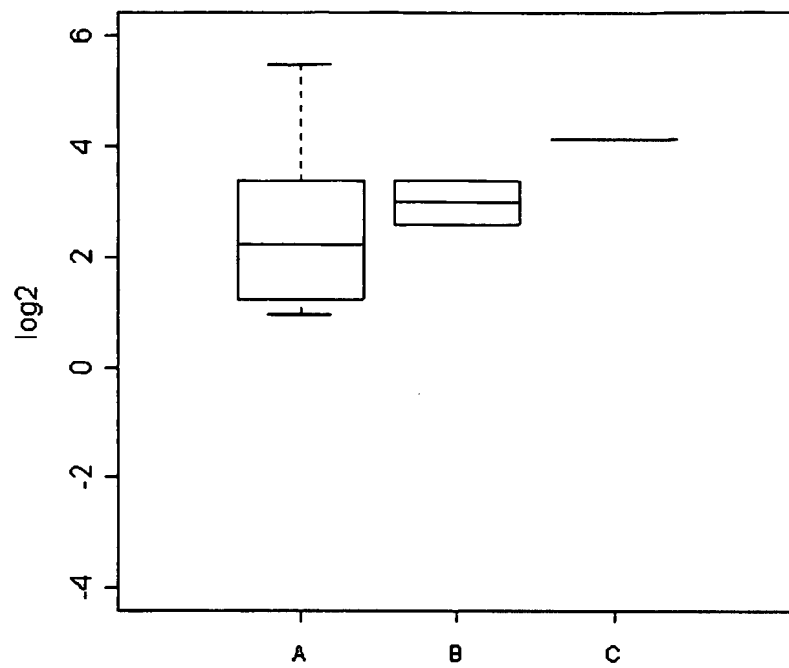
[Fig. 058]



[Fig. 059]

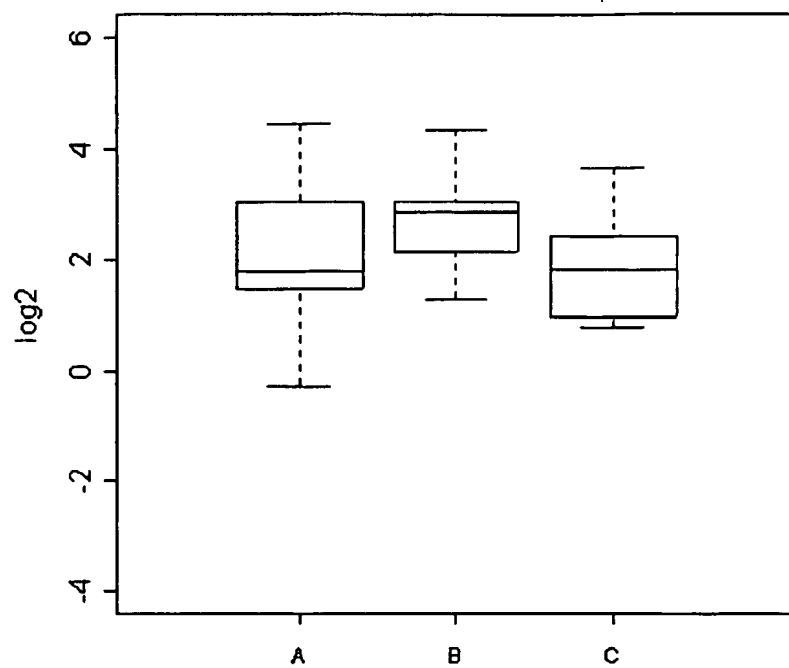
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[Fig. 060]

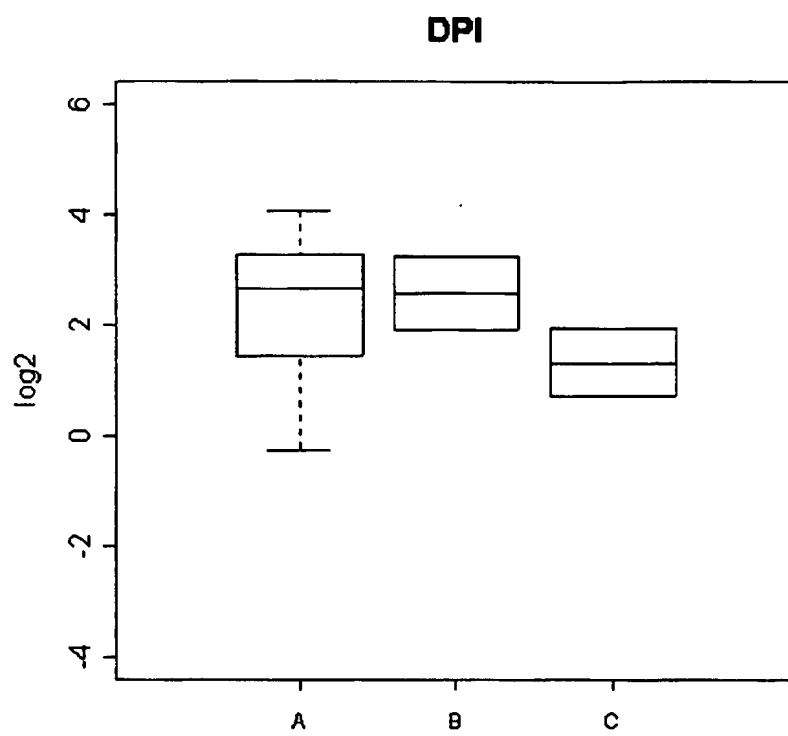
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61/106

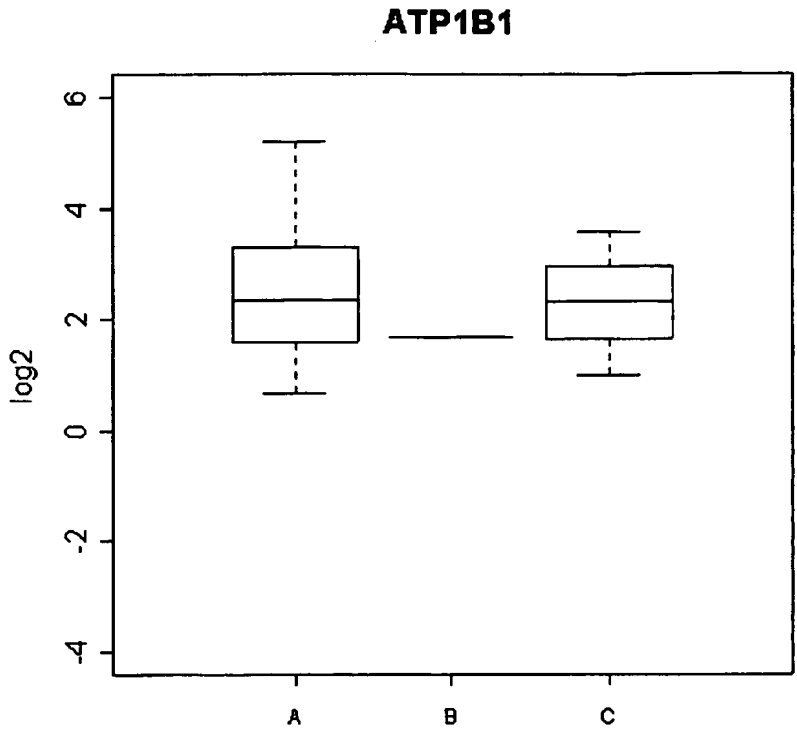
[Fig. 061]

GNG10

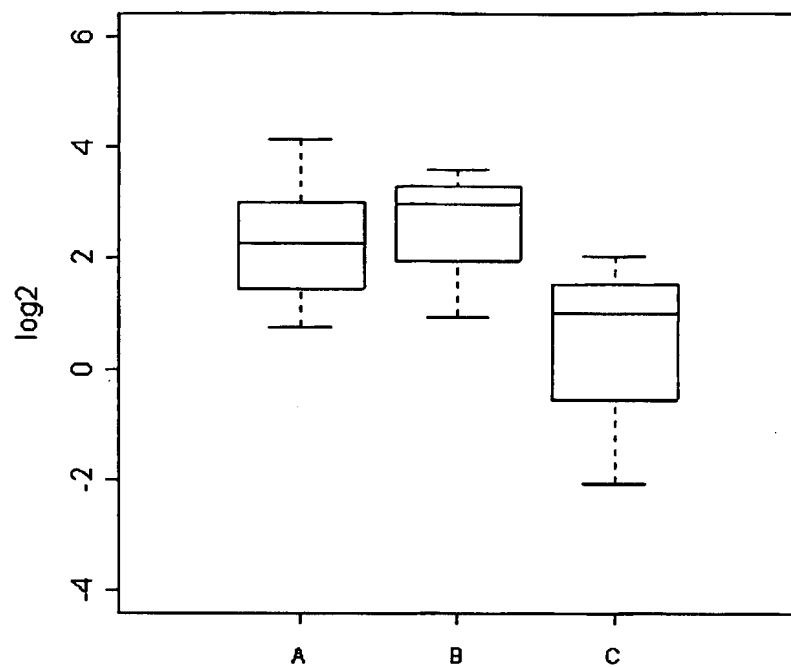
[Fig. 062]



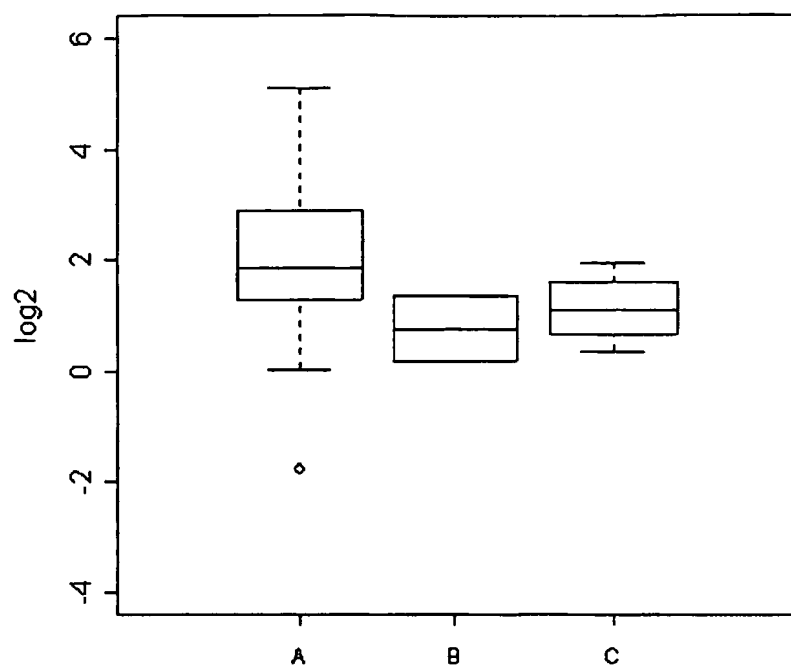
[Fig. 063]



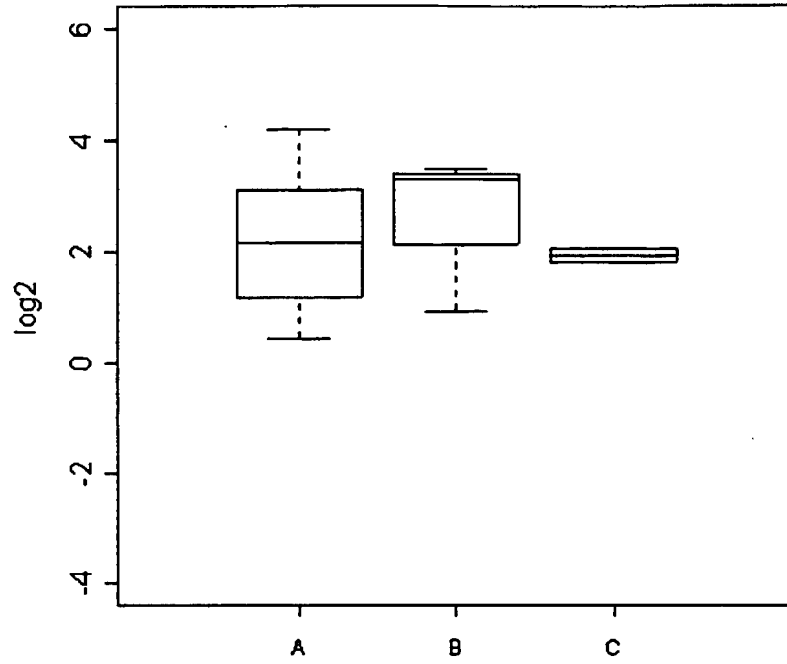
[Fig. 064]

SLC25A3

[Fig. 065]

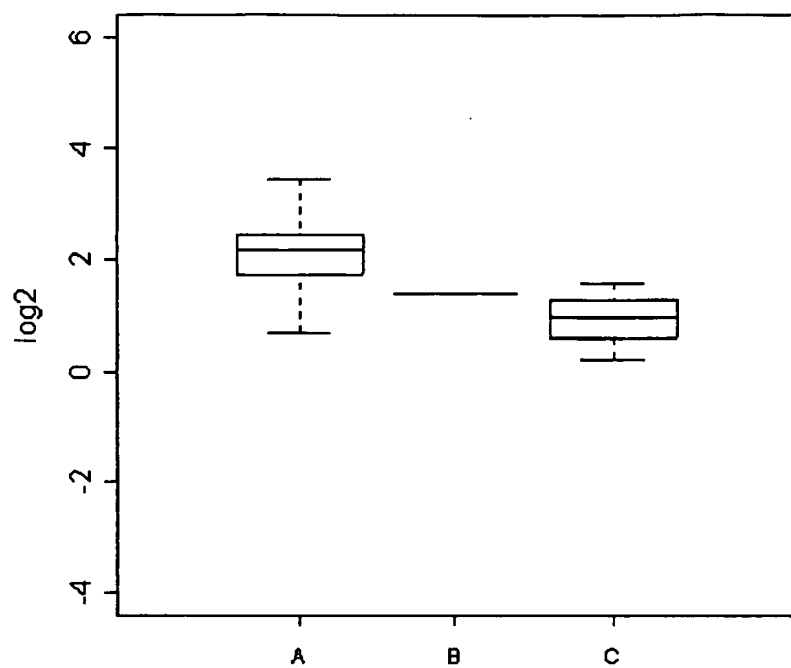
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[Fig. 066]

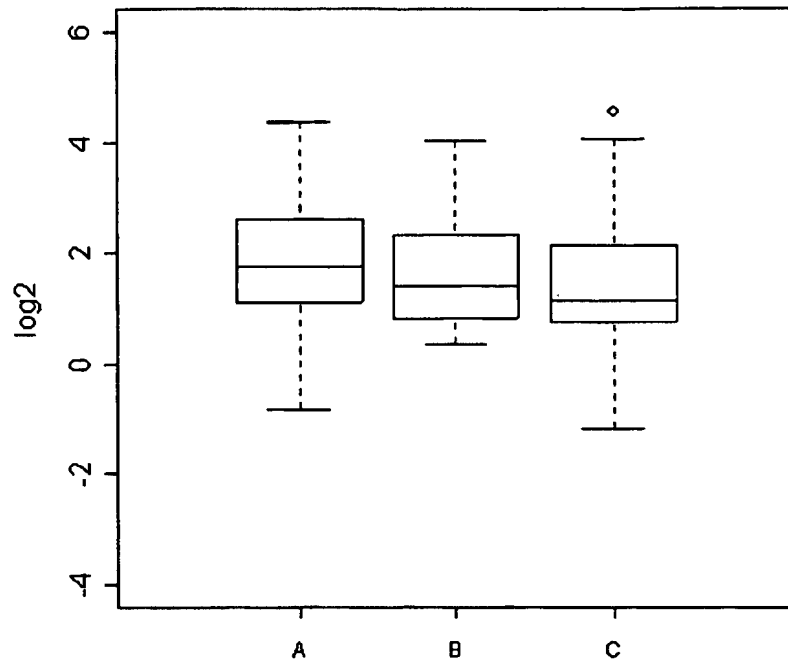
OMG

67/106

[Fig. 067]

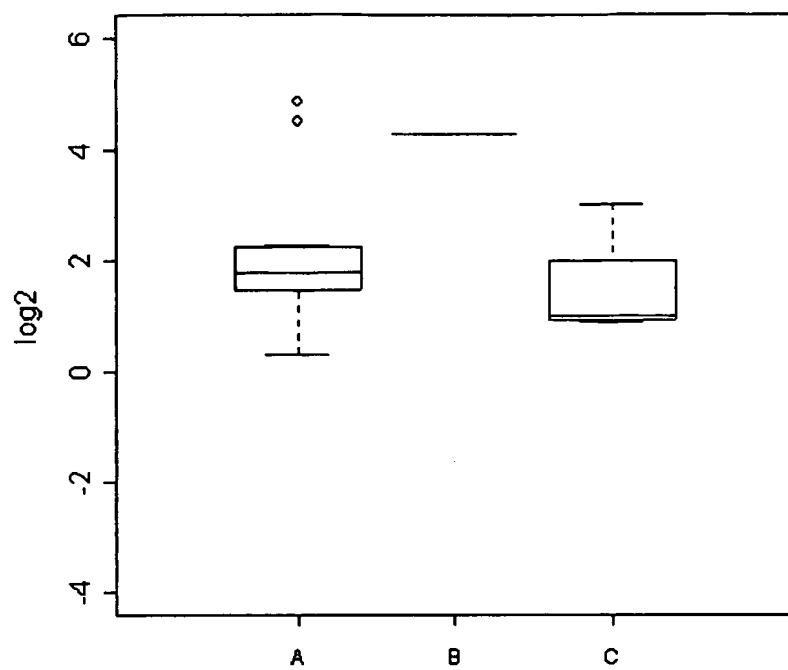
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[Fig. 068]

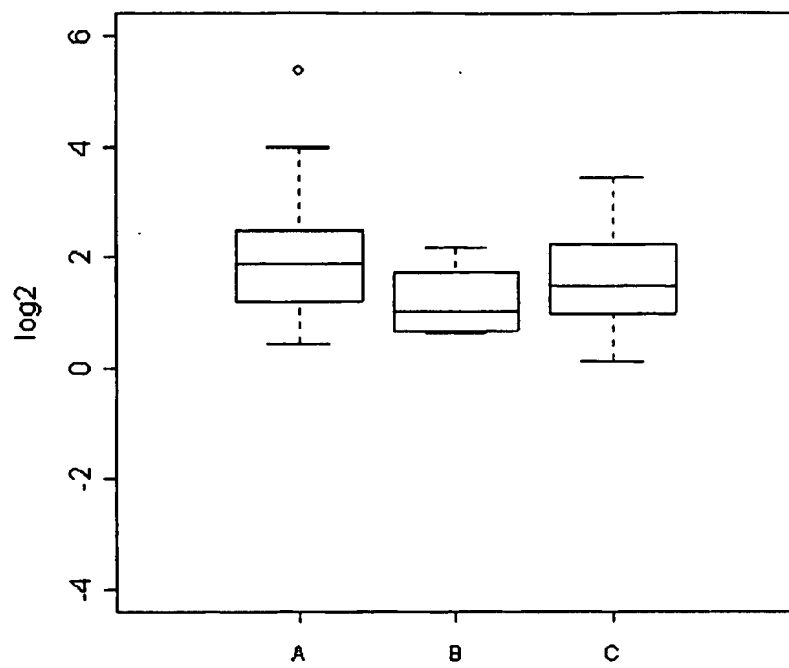
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69/106

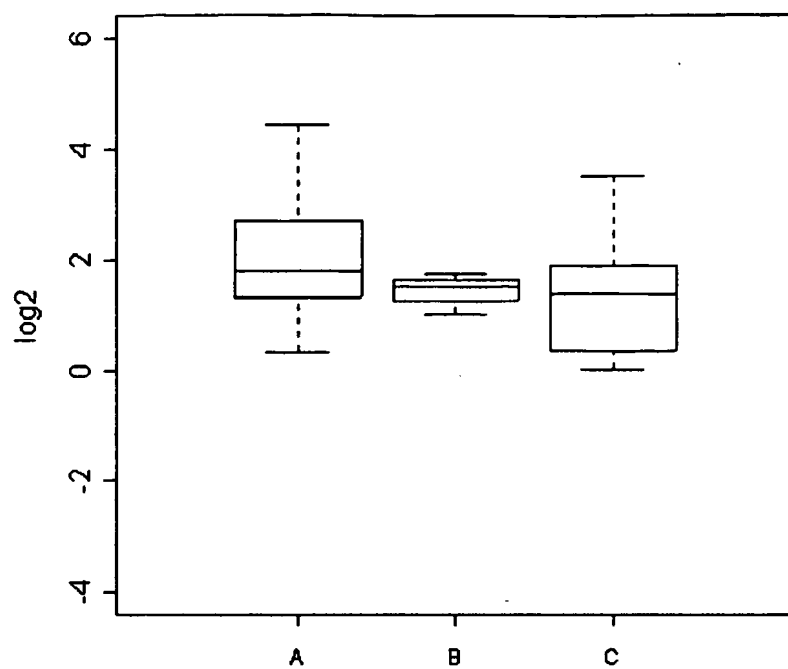
[Fig. 069]

MMP-2

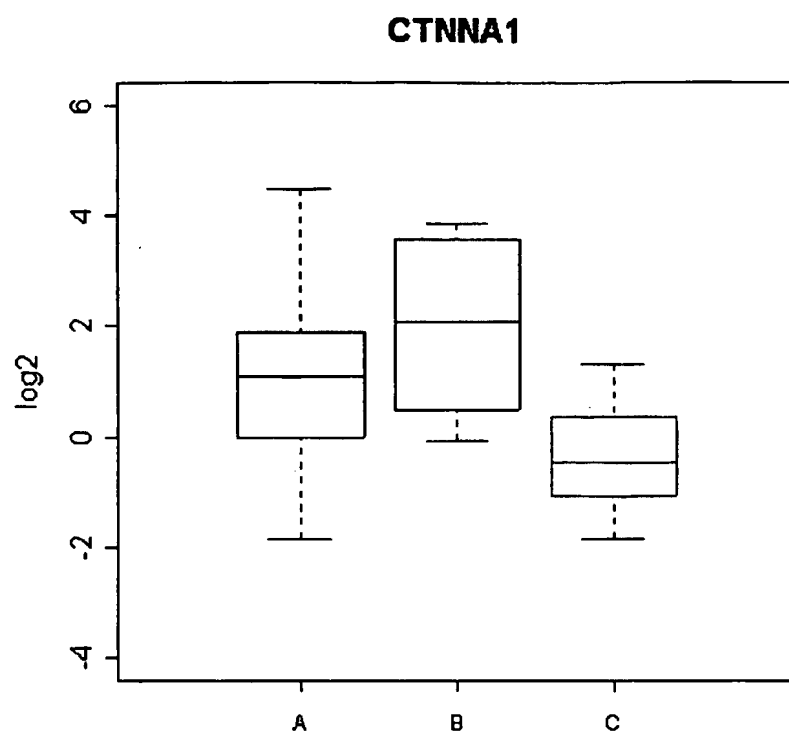
[Fig. 070]

YWHAZ

[Fig. 071]

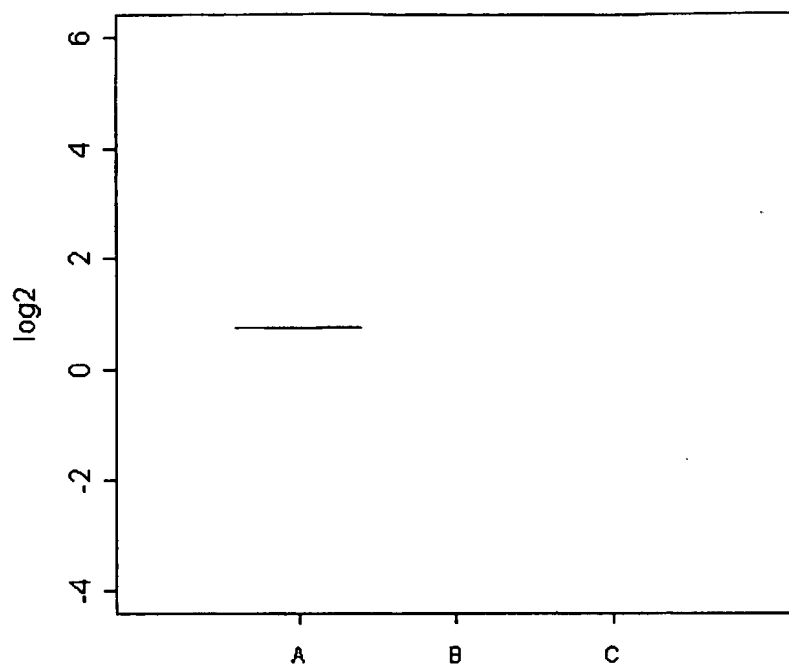
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[Fig. 072]

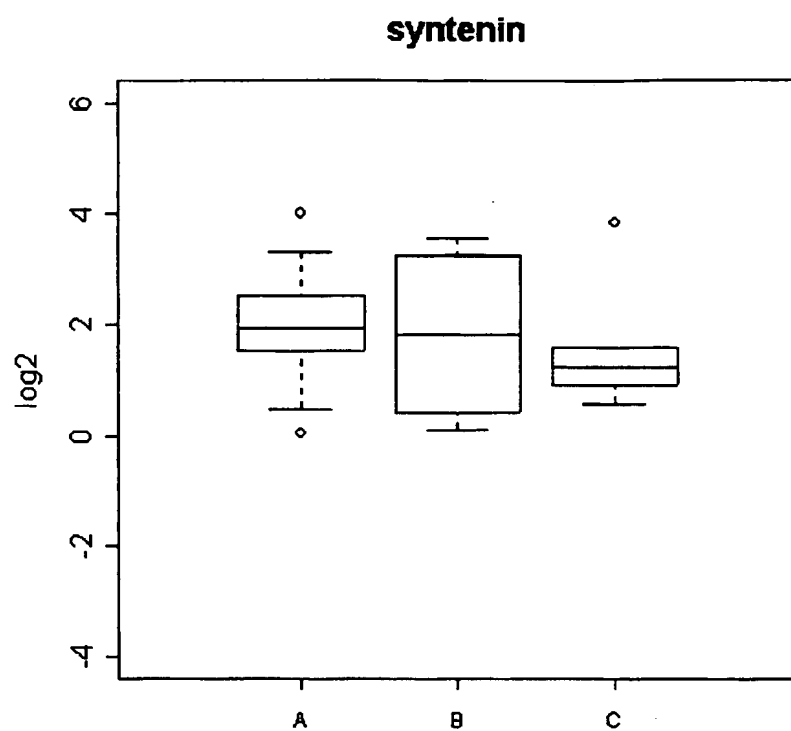


73/106

[Fig. 073]

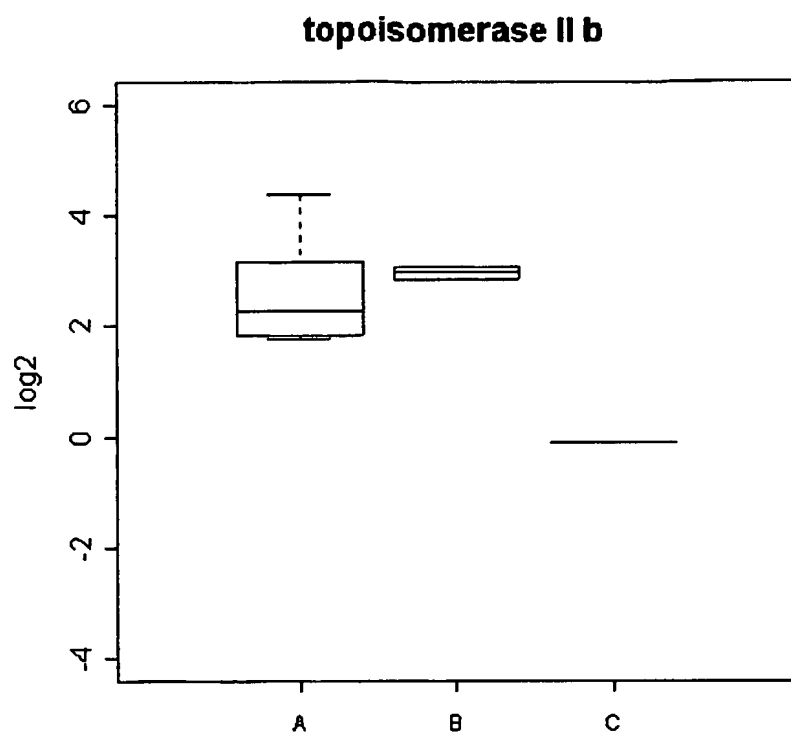
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[Fig. 074]

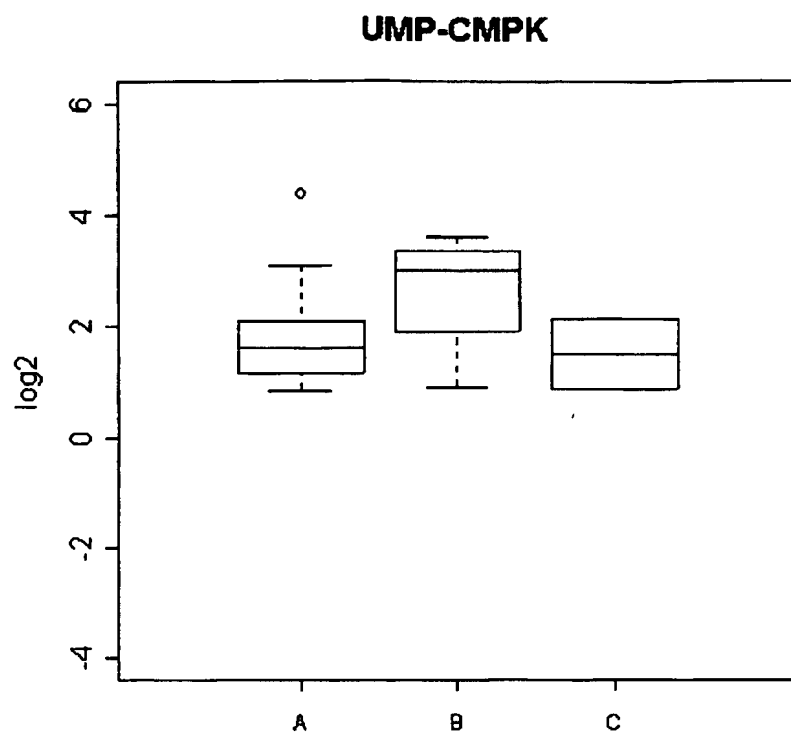


75/106

[Fig. 075]

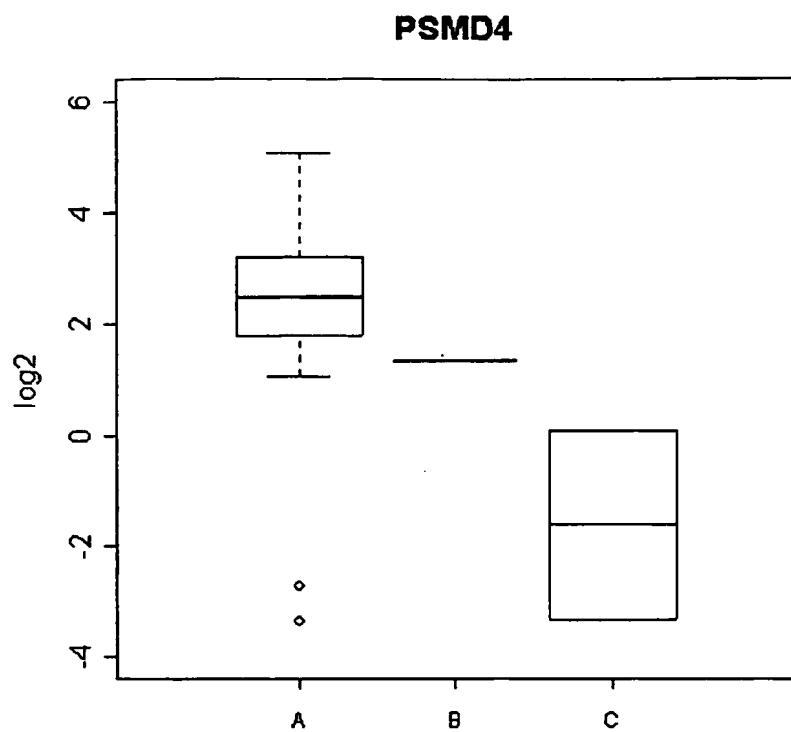


[Fig. 076]

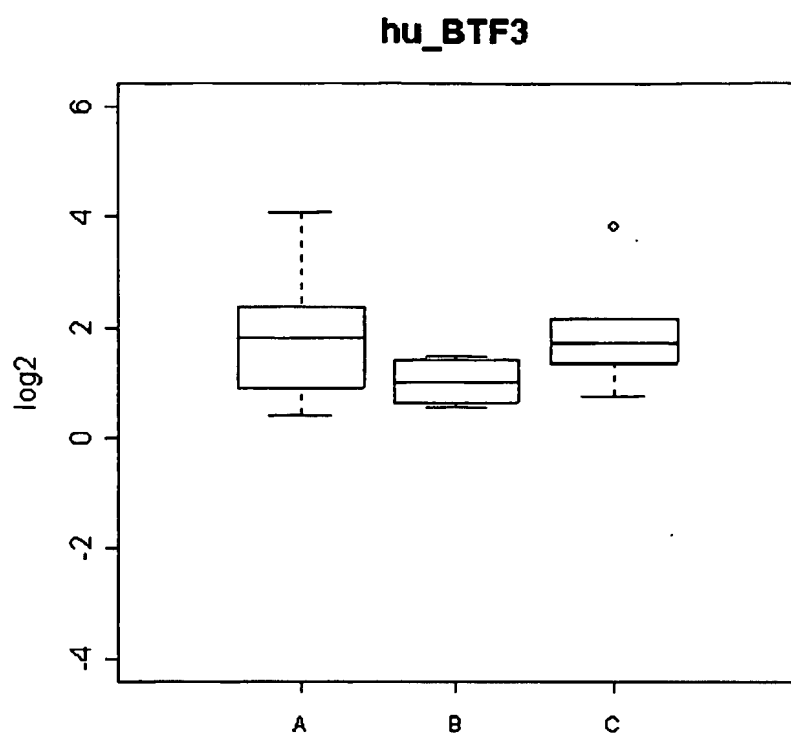


77/106

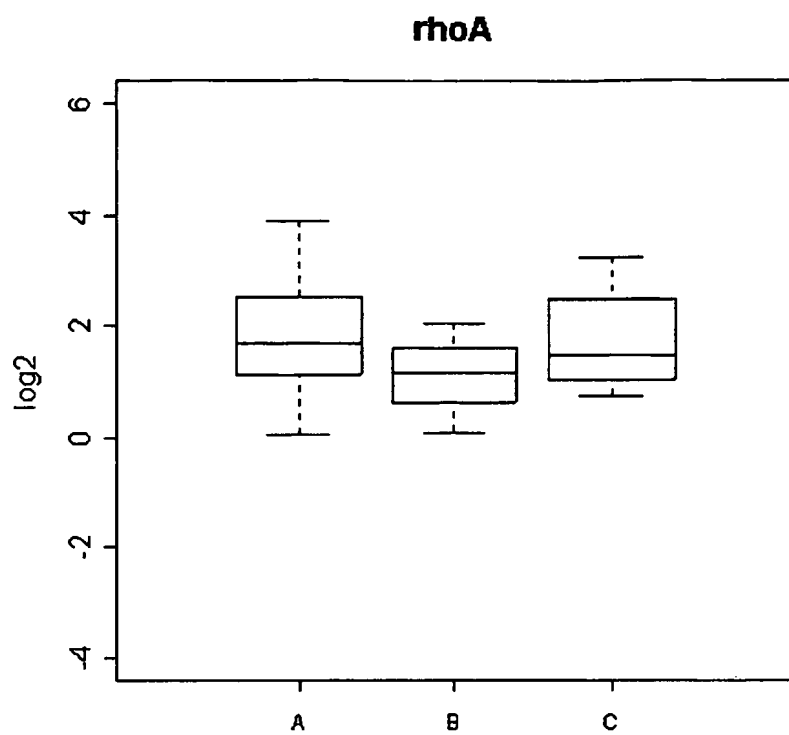
[Fig. 077]



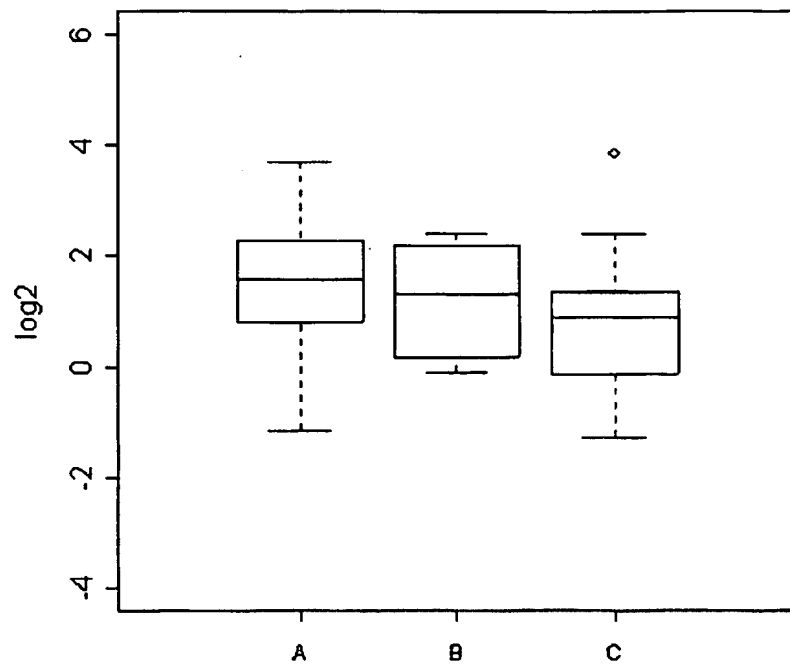
[Fig. 078]



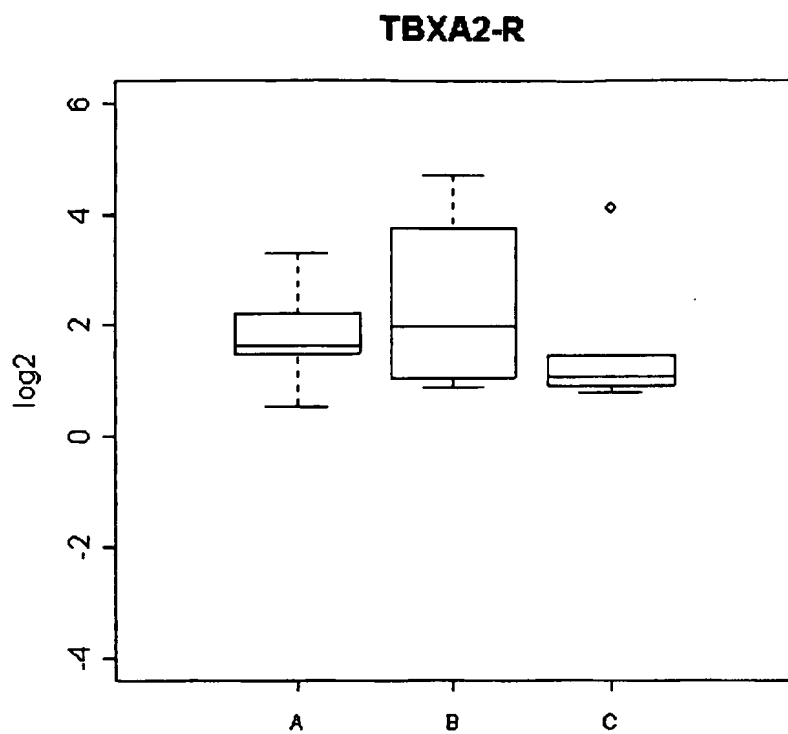
[Fig. 079]



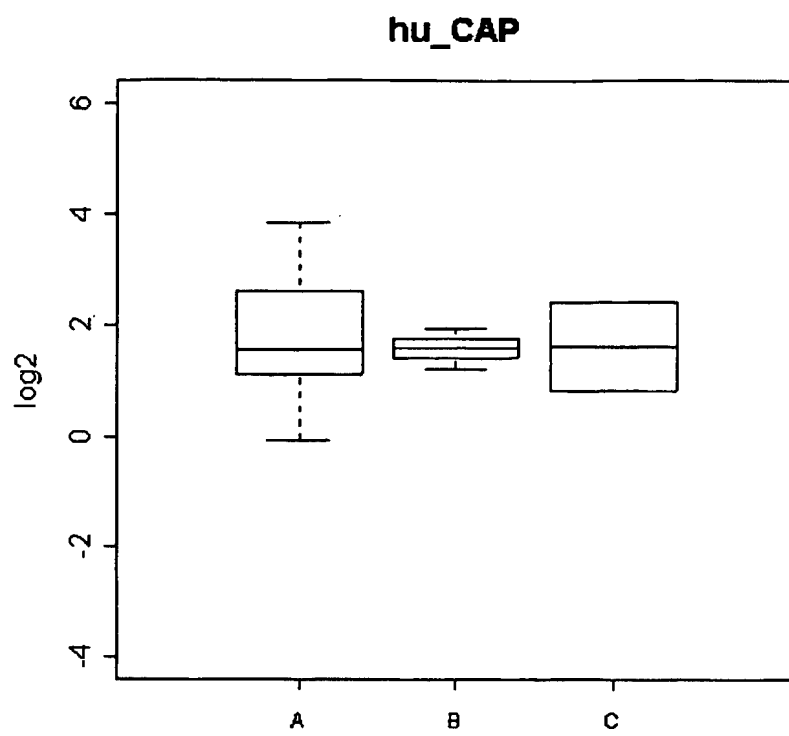
[Fig. 080]

LDH-B

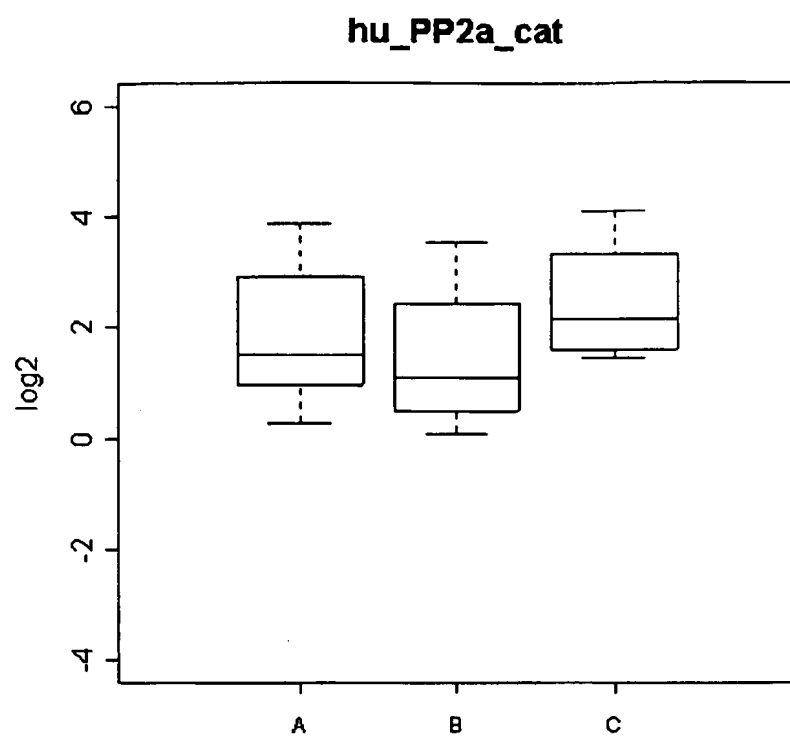
[Fig. 081]



[Fig. 082]

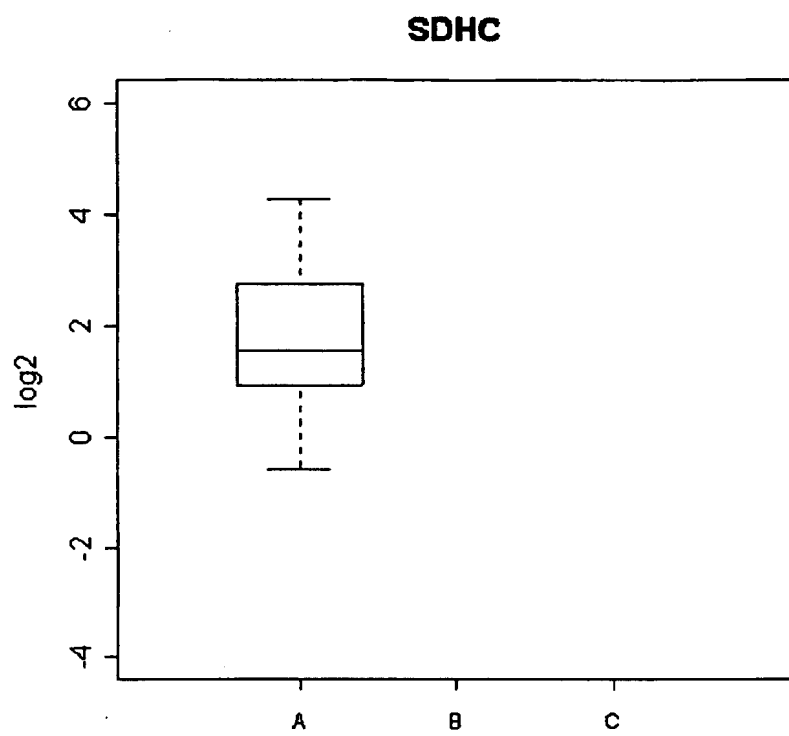


[Fig. 083]

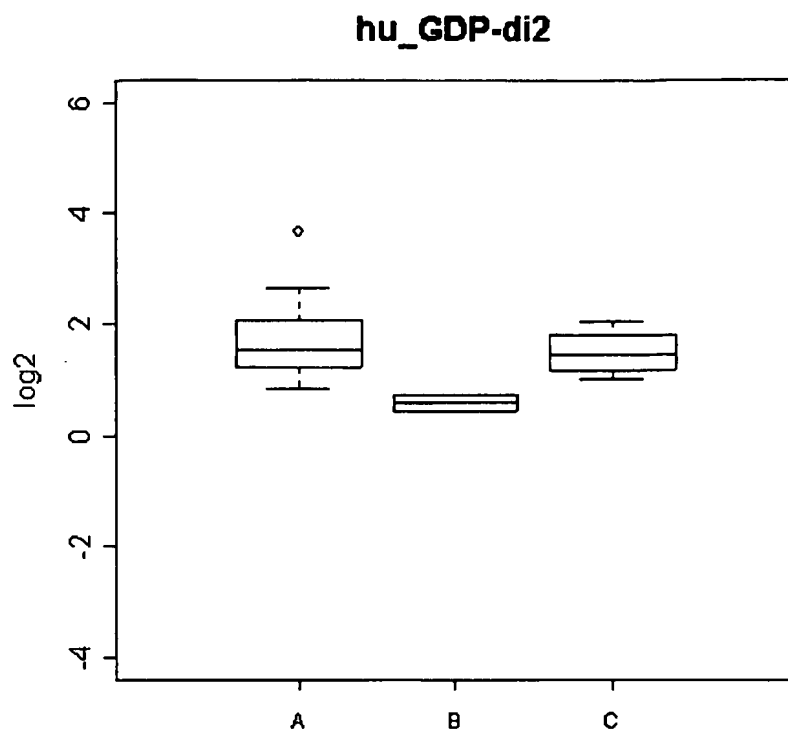


84/106

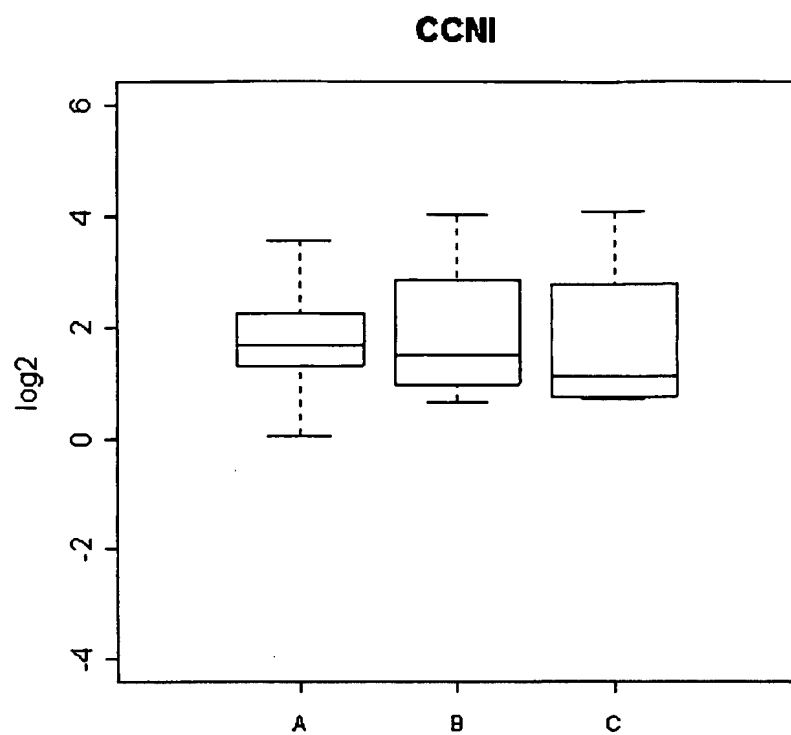
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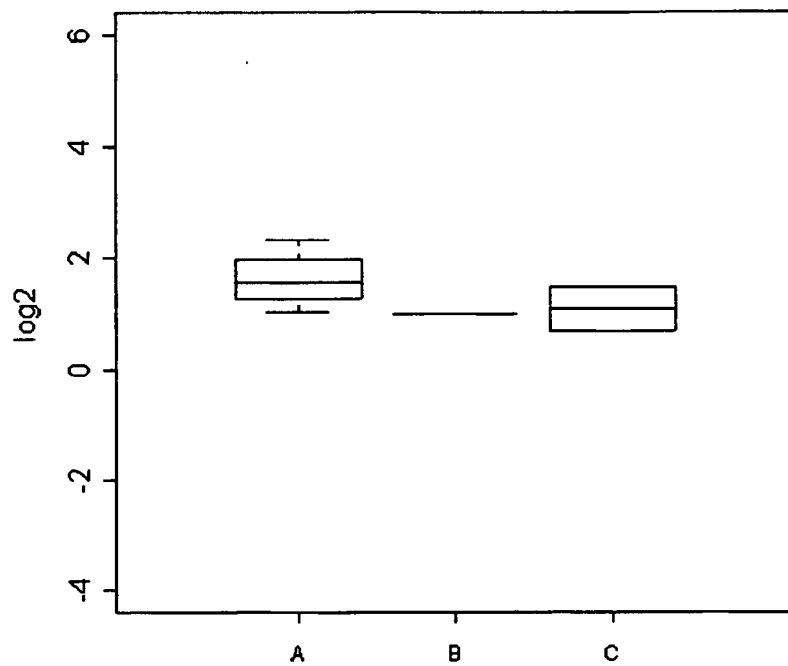
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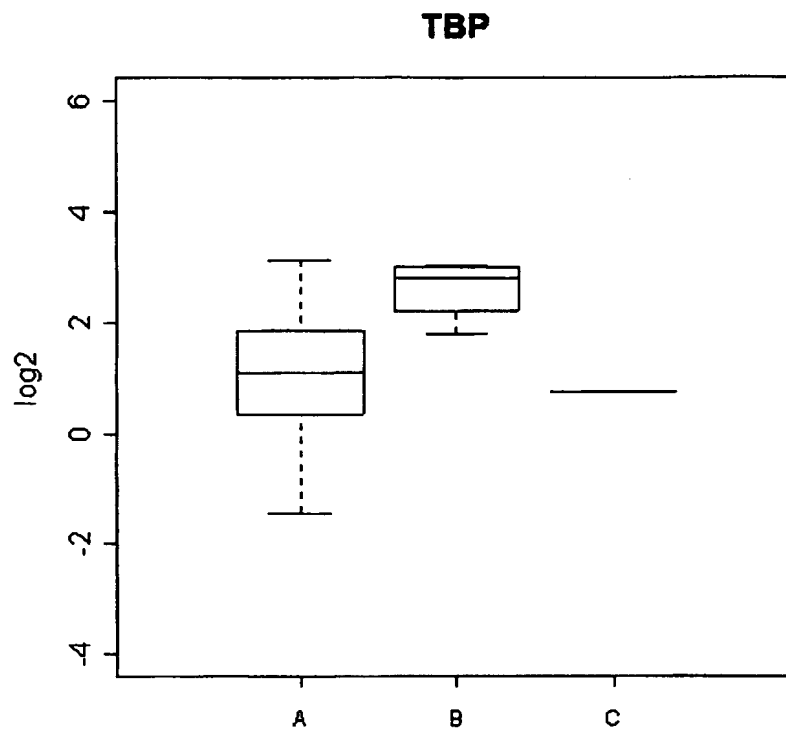
[Fig. 086]



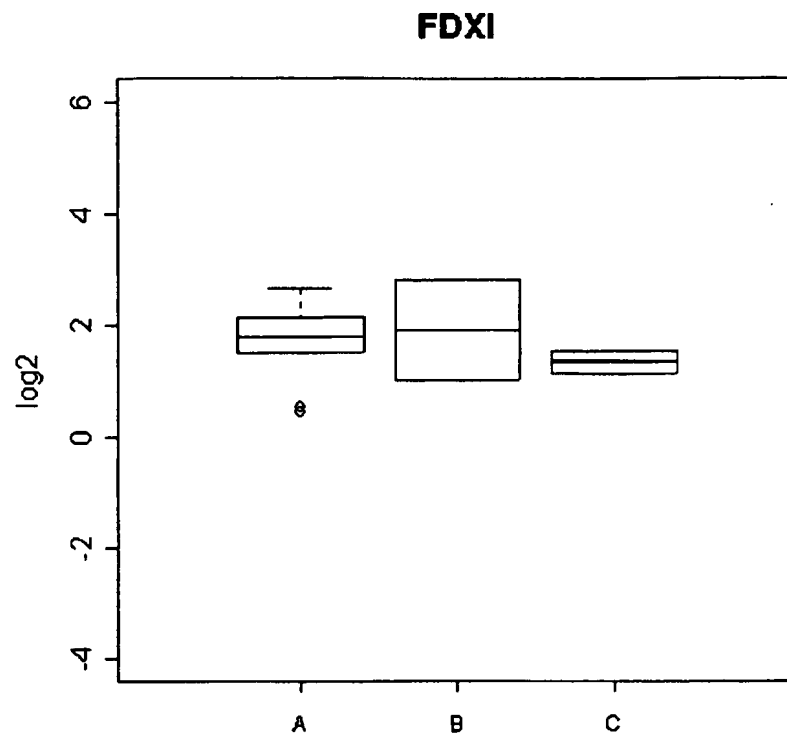
[Fig. 087]

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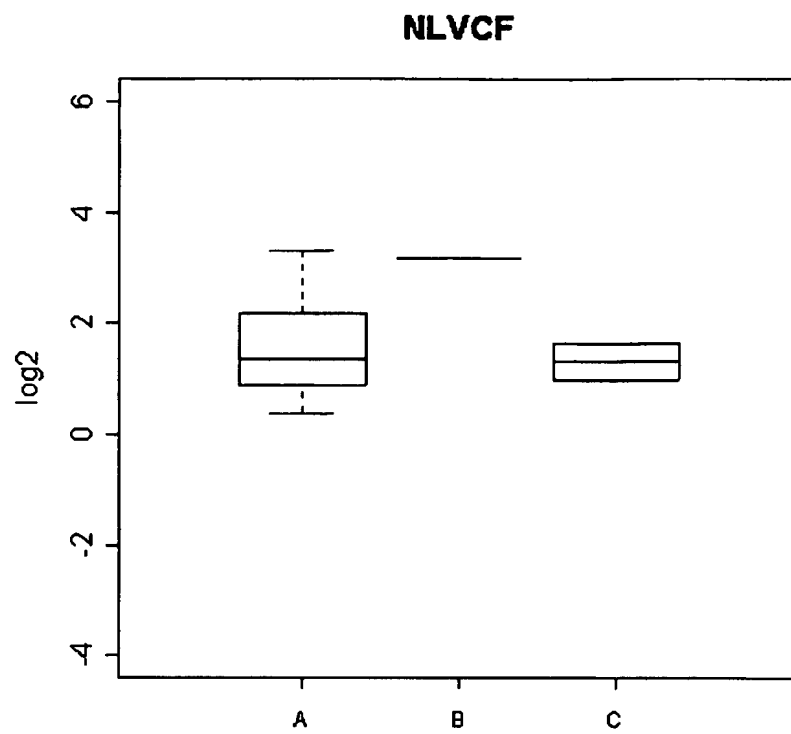
[Fig. 088]



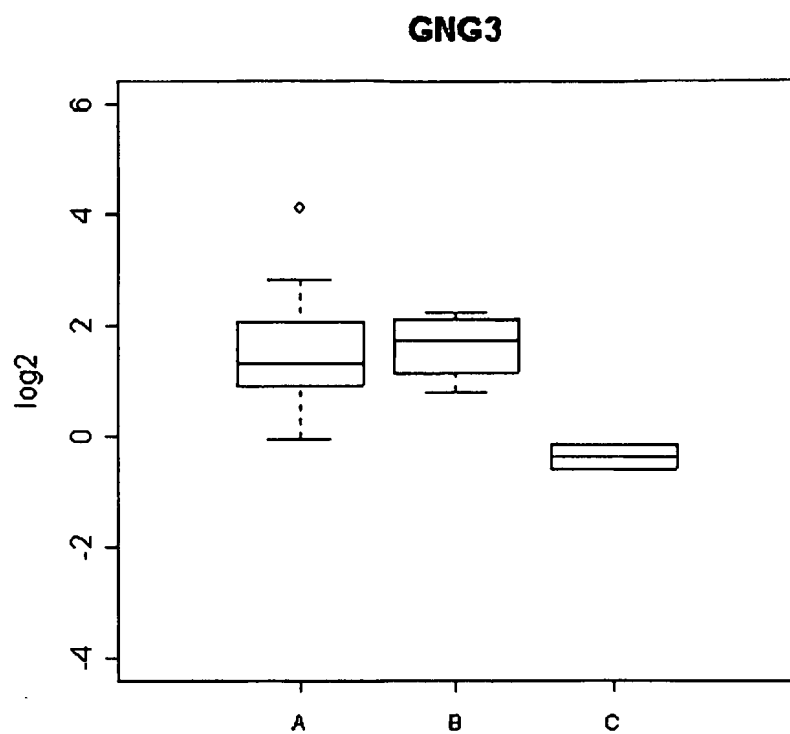
[Fig. 089]



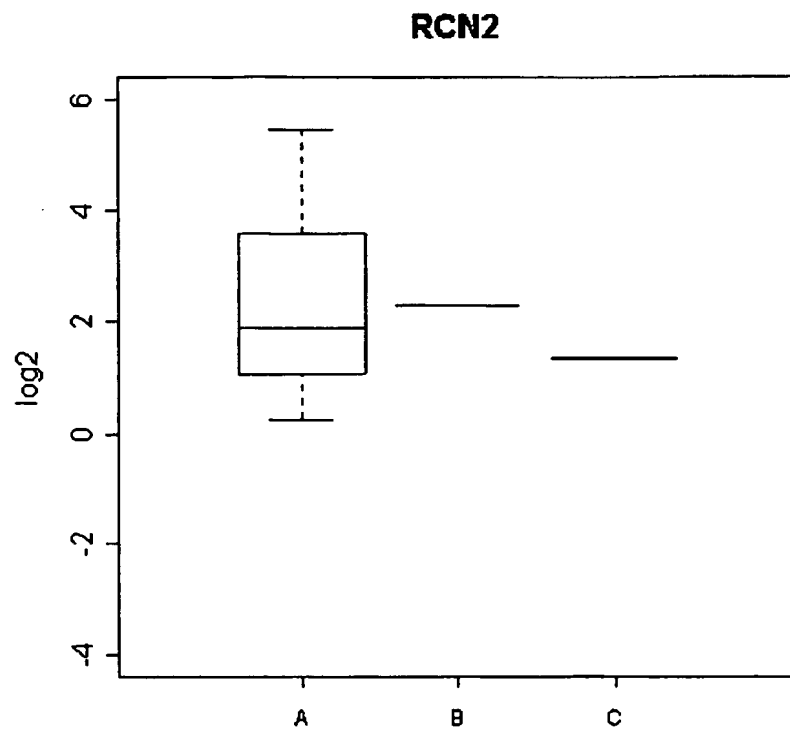
[Fig. 090]



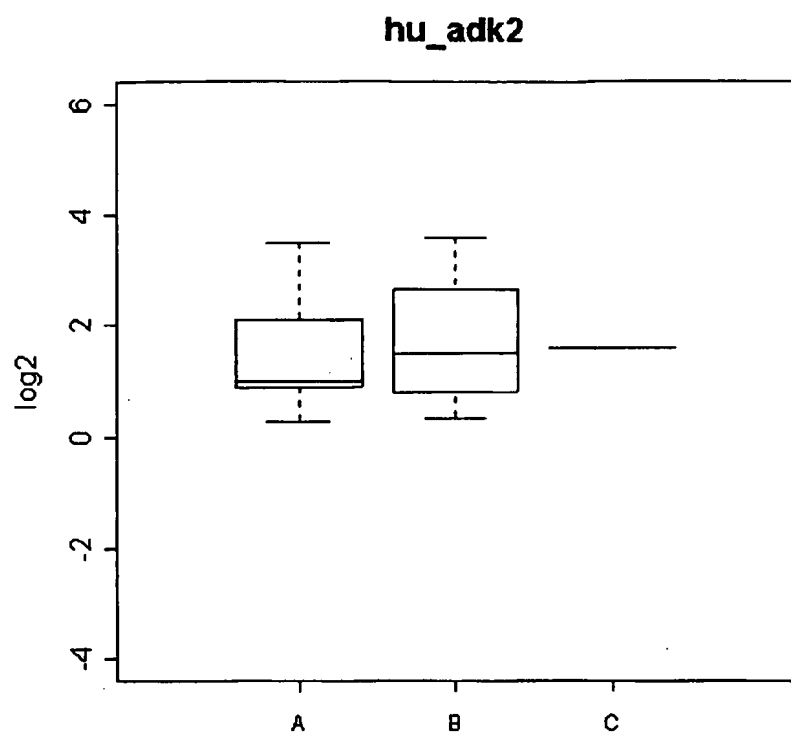
[Fig. 091]



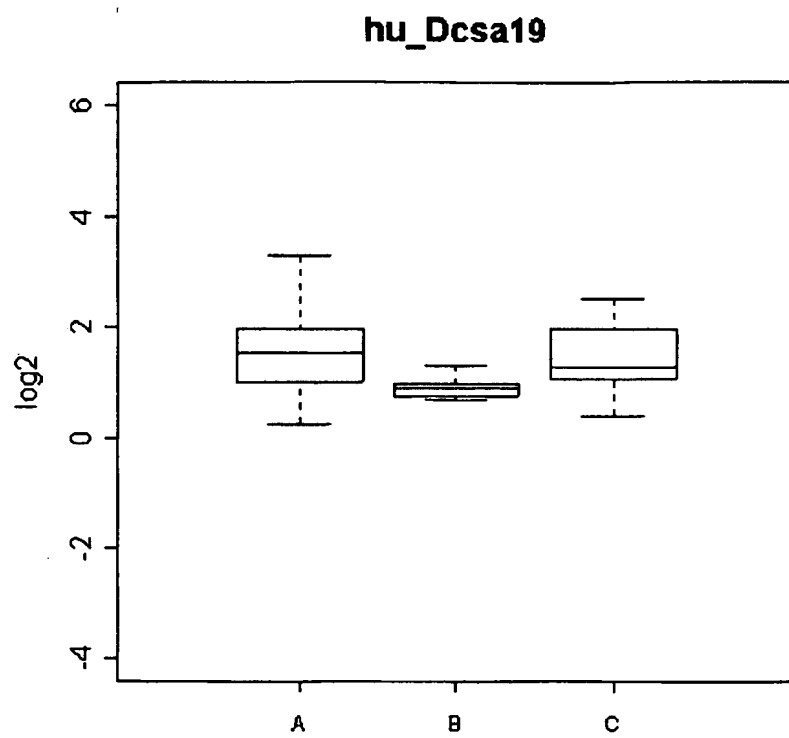
[Fig. 092]



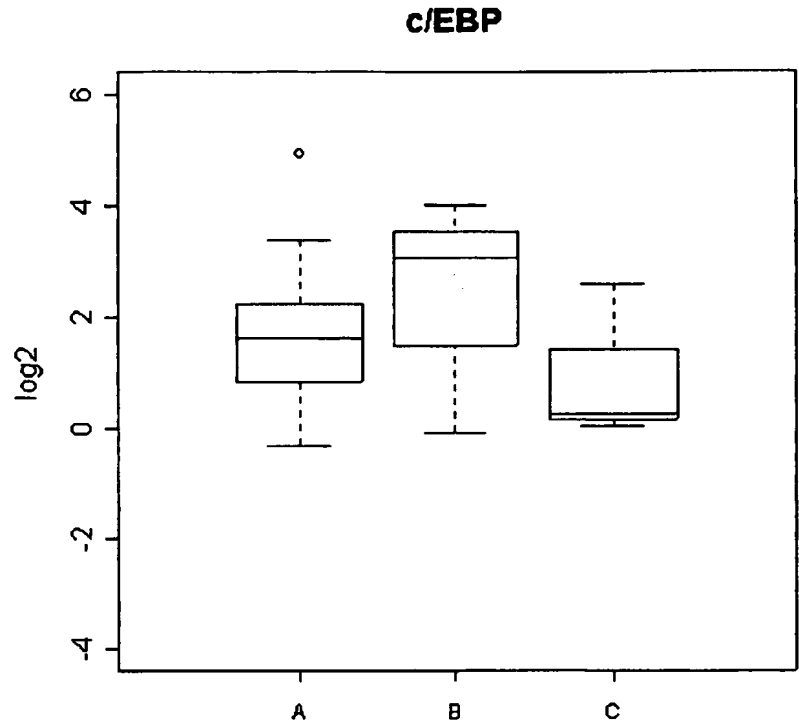
[Fig. 093]



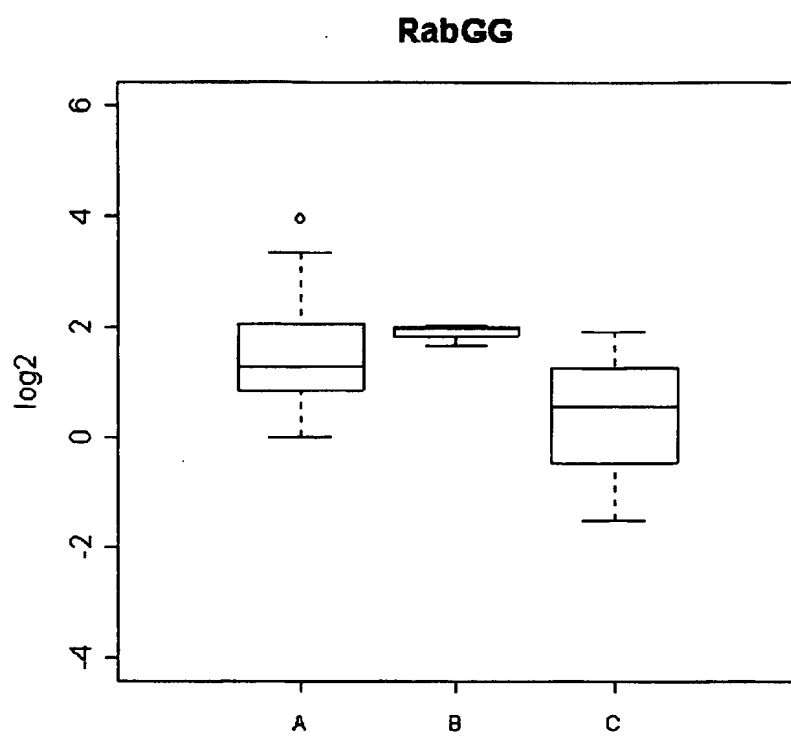
[Fig. 094]



[Fig. 095]

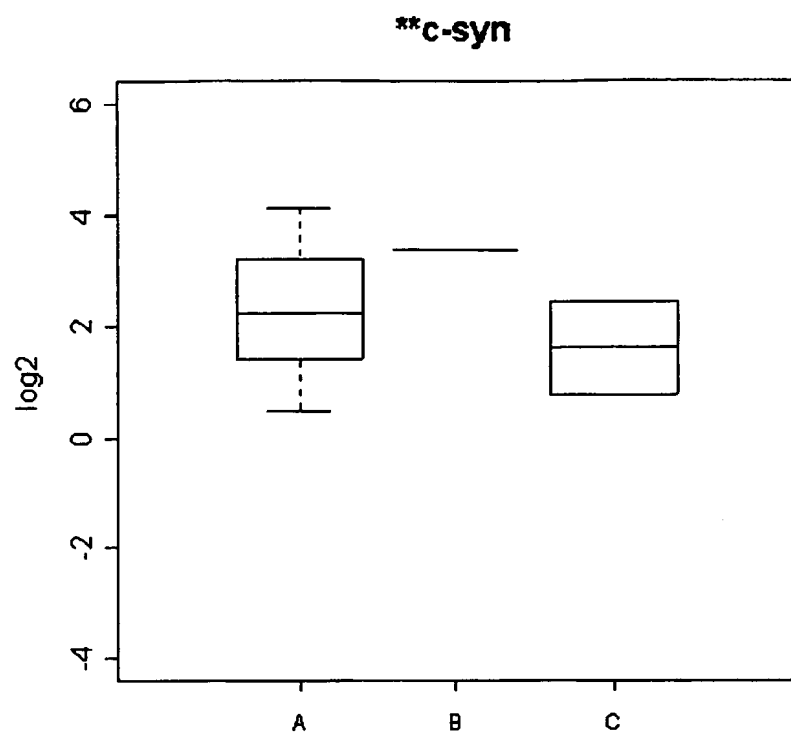


[Fig. 096]

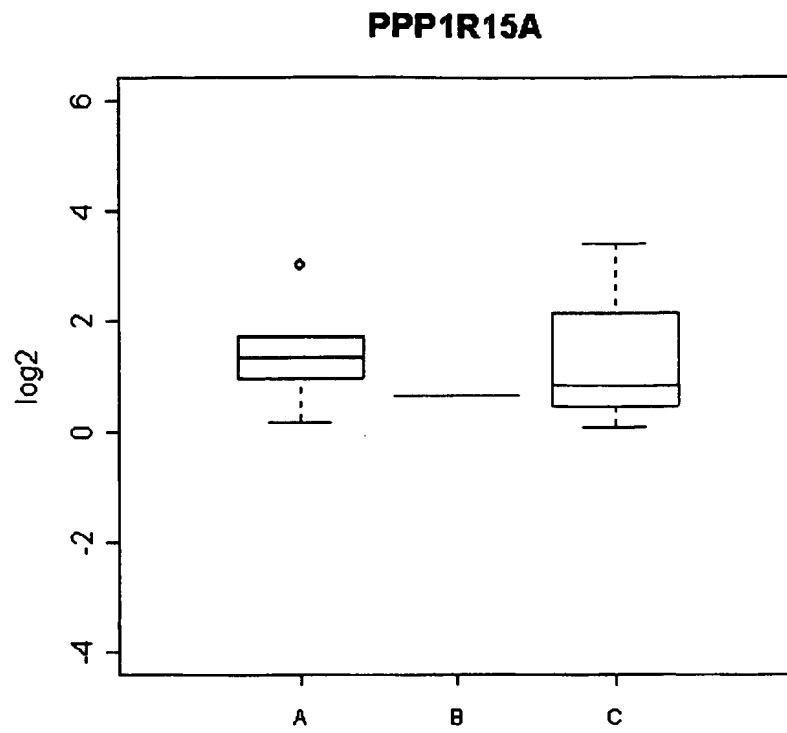


97/106

[Fig. 097]

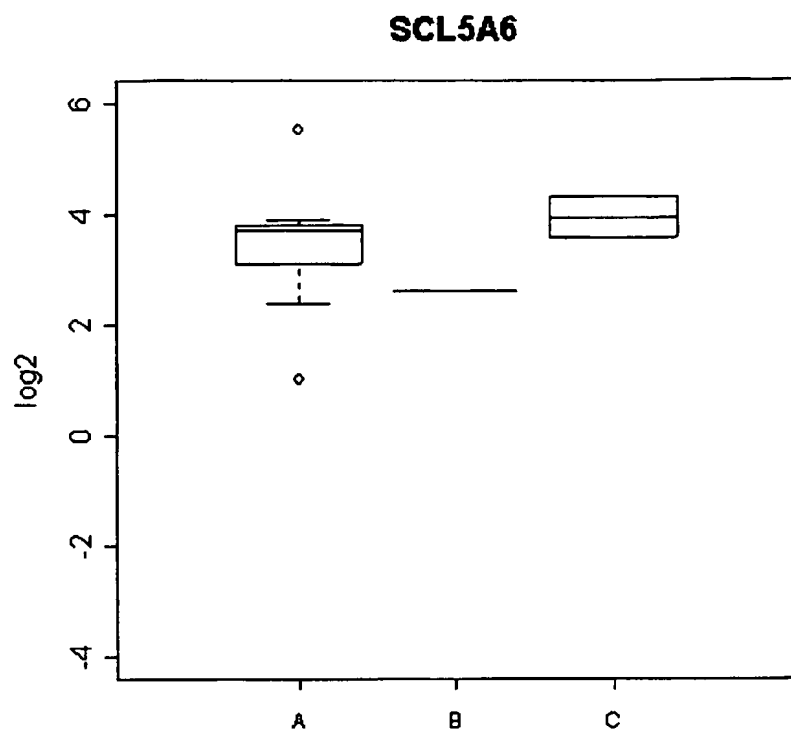


[Fig. 098]

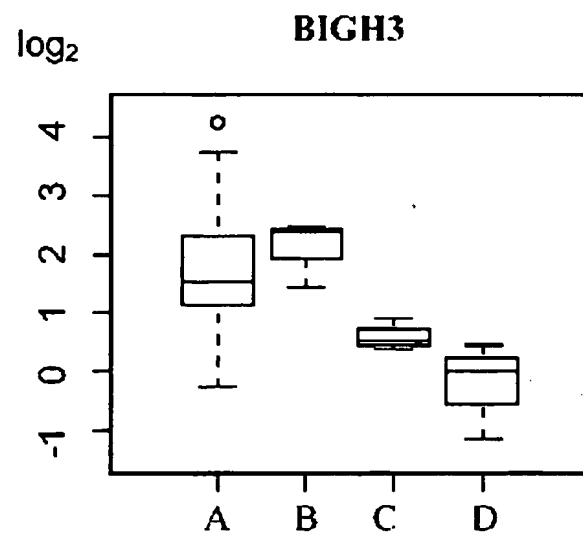
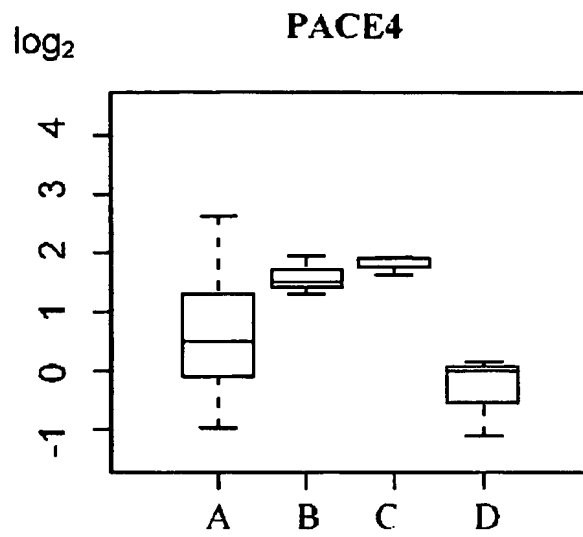


99/106

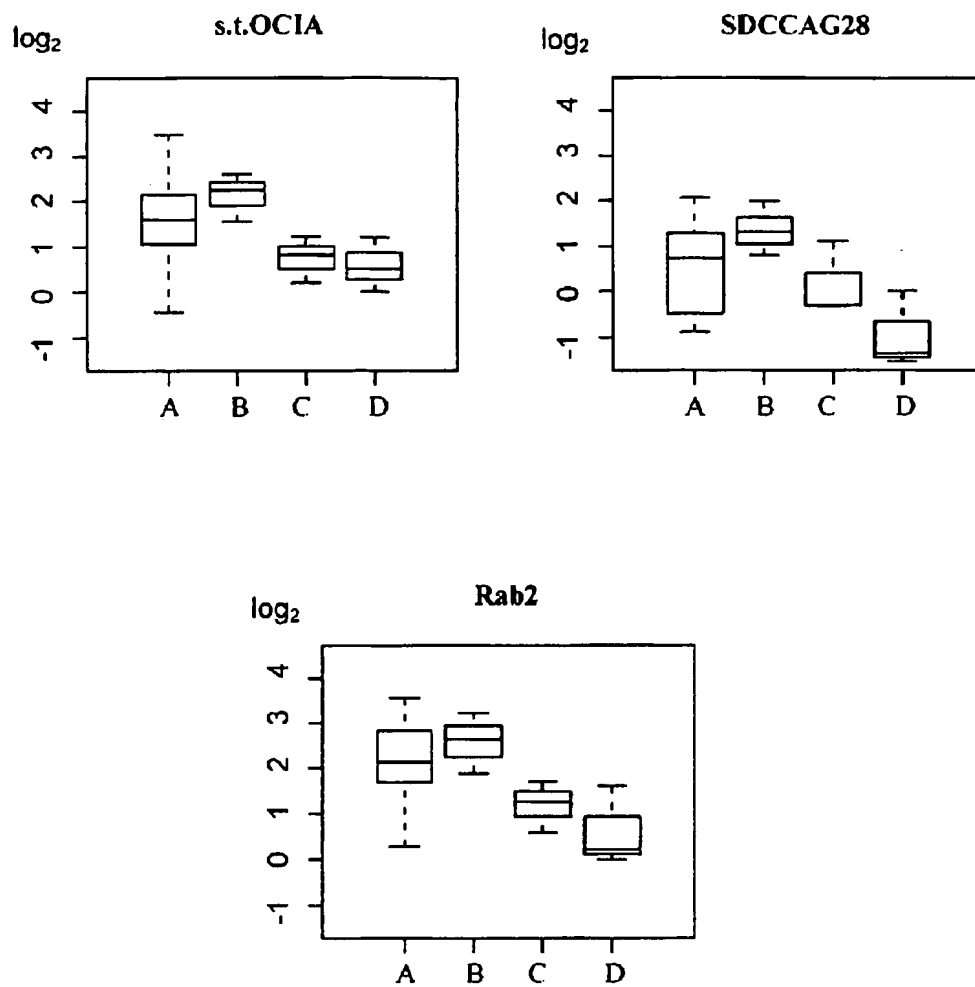
[Fig. 099]



[Fig. 100]

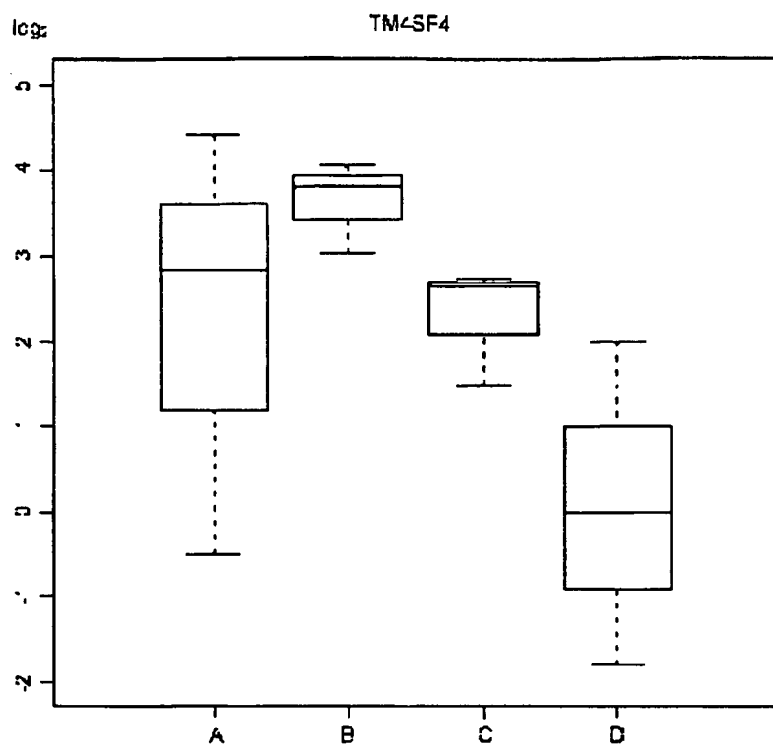


[Fig. 101]

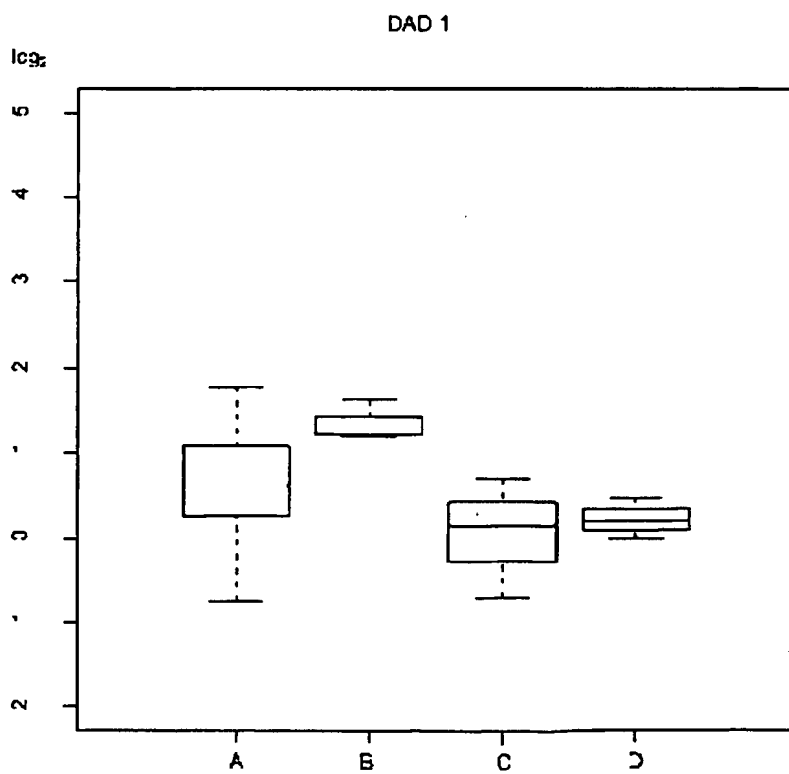


102/106

[Fig. 102]

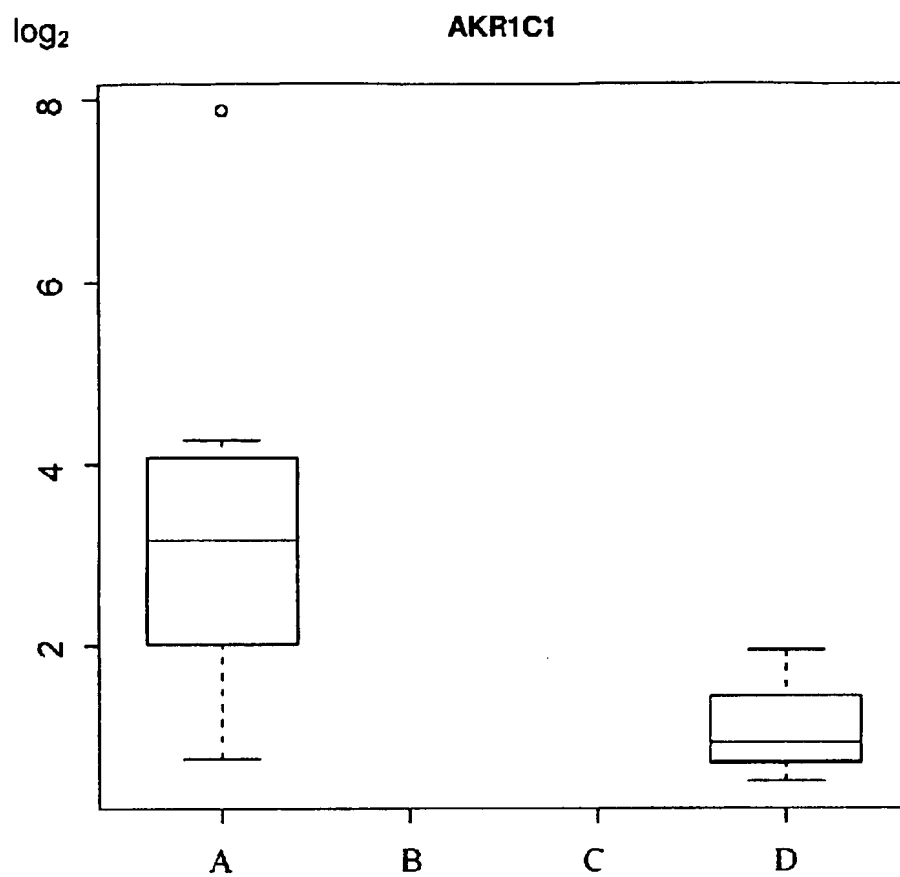


[Fig. 103]

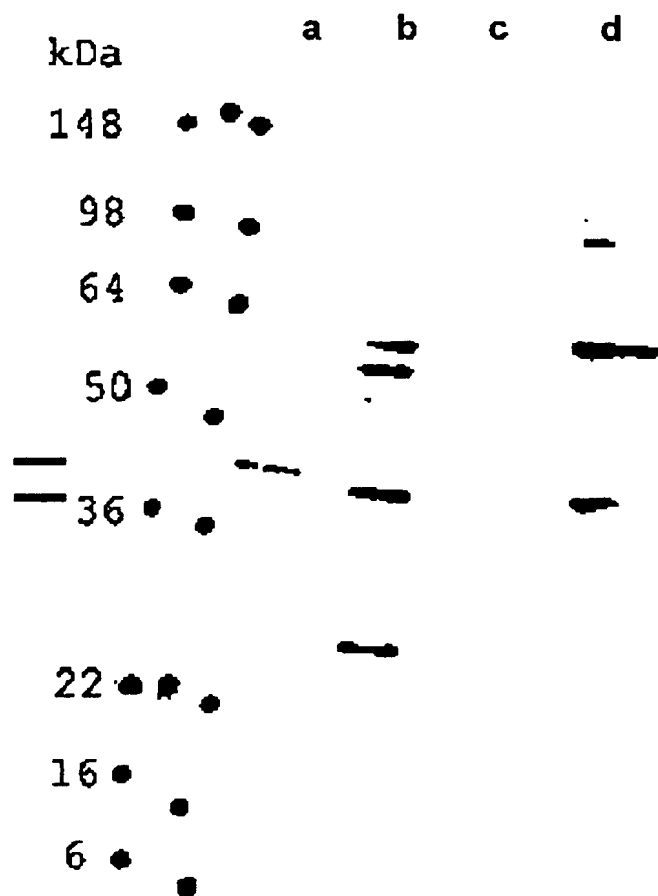


103/106

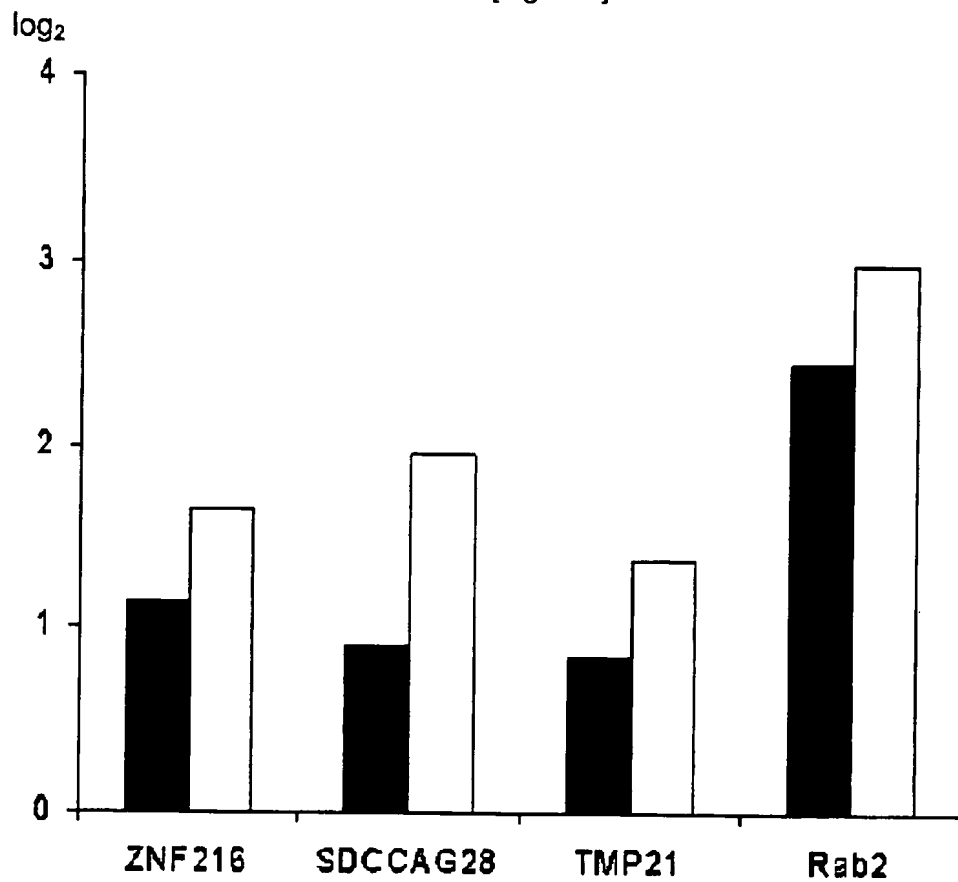
[Fig. 104]



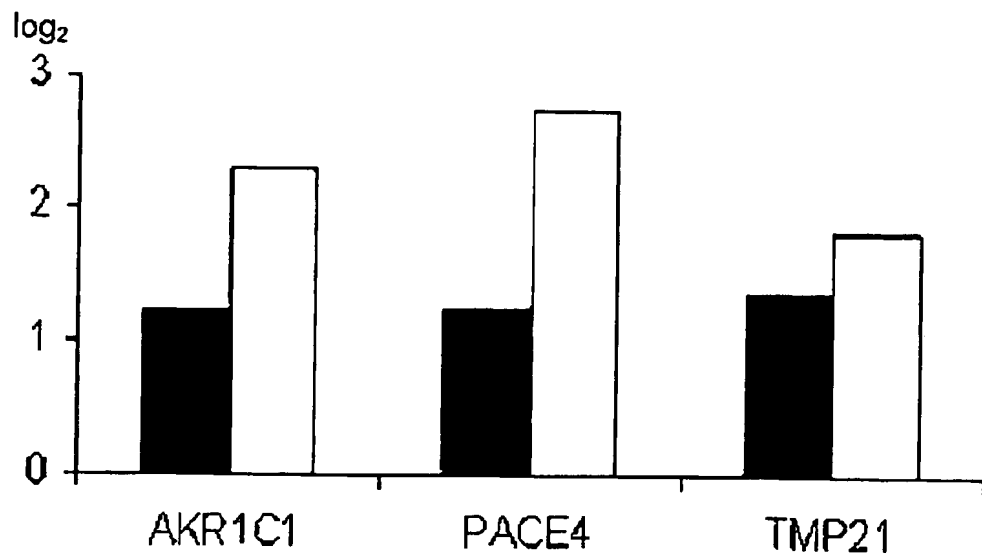
[Fig. 105]



[Fig. 106]

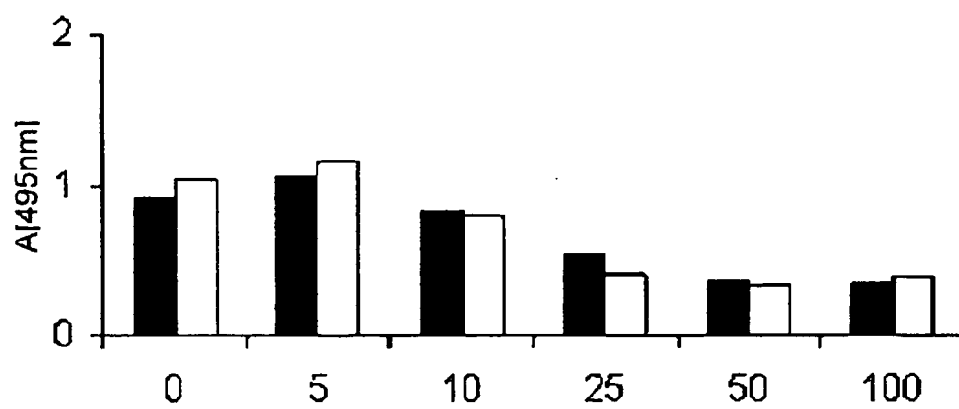


[Fig. 107]

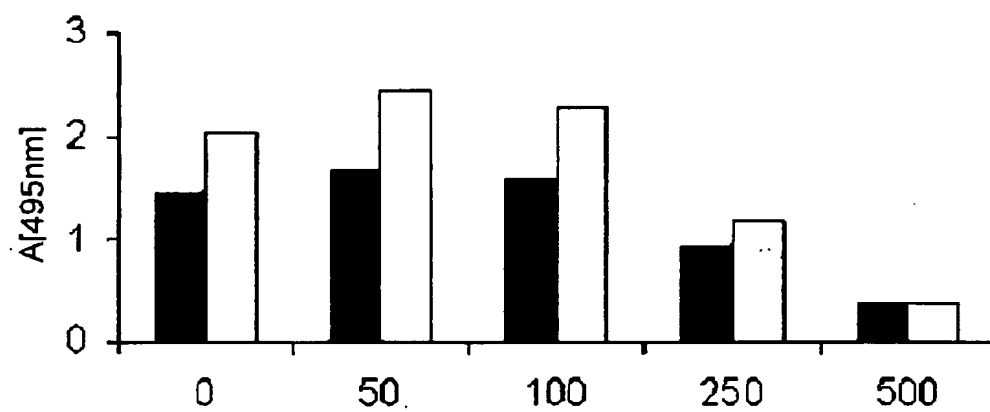


106/106

[Fig. 108]



[Fig. 109]



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gacgtggct cctggggcta tttctcccta ataaaggatg atccagggtcc tcatttccaa
3960

gtcccaatg ctctgaaaac caaaagtatt ttcataaccc atttgaaacc aaacctgacc
4020

gaacttaca ctgataggaa gctatgggta attatgatgt gttcctttta gtgtgattct
4080

tgttgcaga aatgtcaata tattttatga catgggtccc tactagggat tatacagtat
4140

tgctgacta cttcctaaga gccaaaaata aaaaatctga attcc
4185

210> 2

211> 2425

212> DNA

213> Homo sapiens

400> 2

cggcgcccg gtctctccctc cacctctctc tcggcccccc ctcgcttccc tcctcccact
60

cccagctc cggcgtcgtc ccggccacgc tcgacgctgc tgcaggaaca aaggaagacc
120

cgcgcgggc ggcgggcgca cctccgcctg ctgctccgac ccgctcccgg cccgcggcgg
180

ggcaccagg gcgcccggct cagccttccc ggaggcctcg gcccggcctc atcgtgccgg
240

ttcgcgcg gcacccggct ttcgcatctg ggaccctgca ggaaaaatat ggctcaggag
300

ctaaccaga ccccgggggc catgctgtgt agcacaggat gtggctttta tggaaatcct
360

ggacaaatg gaatgtgttc agtttgctac aaagaacatc ttcagaggca gcaaaatagt
420

gcagaatga gcccaatggg gacagctagt ggttccaaca gtcctacctc agattctgca
480

ctgtacaga gagcagacac tagcttaaac aactgtgaag gtgctgctgg cagcacatct
540

aaaaatcaa gaaatgtgcc tgtggctgcc ttgcctgtaa ctcagcaaat gacagaaatg

eolf-seql-S000001.txt

600

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660

ctcagccca gtccatcagt ttctcagccc agtacttctc agagtgaaga aaaagctcct
720

aattgccca aaccaaagaa aaacagatgt ttcattgtgca gaaagaaagt tggctttaca
780

ggtttgact gccgatgtgg aaatttgttt tgtggacttc accgttactc tgacaagcac
840

actgtccgt atgattacaa agcagaagct gcagcaaaaa tcagaaaaga gaatccagtt
900

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960

ttttatttt aatatatcgt aggaaaacat taaagagcag atgcatggcc atttttcttt
1020

atgttctcc agagttttac attacacttg tctgtcttat aattgatatt ttaggatgtt
1080

gggtgtttg ttacaggcag aattggatag atacagccct acaaagtgtat atgccctccc
1140

tgaaaaaaa ttggatgaaa atctgcacag caaagtgaaa cacacagata ataggaacaa
1200

atgtagttc ccatgtgcc aacaaaataa atgaaatctc tgcattgttg cagcatatct
1260

ccttttggg aatgtaatca aggtataatc tttggctagt gttatgtgcc tgtatttttt
1320

aaaatggta caccagaaaa ggactggcag tctacttcta ccatagttaa acttcaccct
1380

cttaatttc acaacatatt ctttgggaagc aggaagaaat gctcataaag aggatcagac
1440

ctctttccc gtgaaaccag tatttggcgc catatataag cctgggttaa ttgggtcatct
1500

agctgtca aataagacat tctgtgaaag gtaaaccatcg aaactgggta taagtaaaac
1560

atcaagcca acaacagggt cttgagataa cctttgaagc ttattgtact ggccctgcacc
1620

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1680

eolf-seql-S000001.txt

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1740

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1800

ttgtcgaat gttttggttc aagaaagaat gtttaaagct ttttaaaaga cttcagttct
1860

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1920

agtggatc cagcgccact tgcagagggc tgctttatca tattgtactt ggggtgtagga
1980

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2040

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2100

ggaaggttt tttgtgatgt atgaaacttg tgttttttat atataaatga gtatagttag
2160

gttgtggta atgcctgttt tcacttgtaa atagttaagt atgtacacga ggcactactt
2220

tgatttatt gcaatgttca gtcctagttt ttacttttat tcttaaagca ttcagttttg
2280

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2340

ttatgtat tgcacataat catgctattc agcattgatg ctatattgta ttatgtaa
2400

ataaaagcc atgtacagag ggaaa
2425

?10> 3

?11> 1220

?12> DNA

?13> Homo sapiens

!00> 3

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60

tcatgcct gtcctgggat ttggcaccta tgcgcctgca gaggttccta aaagtaaagc
120

tagaggcc accaaattgg caattgaagc tggcttccgc catattgatt ctgctcattt
180

eolf-seql-S000001.txt

itacaataat gaggagcagg ttggactggc catccgaagc aagattgcag atggcagtgt
240

jaagagagaa gacatatctt acacttcaaa gctttggtgc aattcccatc gaccagagtt
300

igtccgacca gccttgga aa ggtcactgaa aaatcttcaa ttggattatg ttgacctcta
360

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420

.ggaaaaata ctatttgaca cagtggatct ctgtgccacg tgggaggccg tggagaagtg
480

.aaagatgca ggattggcca agtccatcgg ggtgtccaac ttcaaccgca ggcagctgga
540

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600

ccttacttc aaccagagaa aactgctgga tttctgcaag tcaaaagaca ttgttctggt
660

gcctatagt gctctgggat cccaccgaga agaaccatgg gtggaccgca actccccggt
720

ctcttgag gaccagtc tttgtgcctt ggcaaaaaag cacaagcgaa cccagccct
780

attgccttg cgctaccagc tacagcgtgg ggttgtggtc ctggccaaga gctacaatga
840

cagcgcac agacagaacg tgcaggtgtt tgaattccag ttgacttcag aggagatgaa
900

gccatagat ggcctaaaca gaaatgtgcg atatttgacc cttgatattt ttgctggccc
960

cctaattat ccattttctg atgaatatta acatggaggg cattgcatga ggtctgccag
1020

aggccctgc gtgtggatgg tgacacagag gatggctcta tgctggtgac tggacacac
1080

cctctggtt aaatctctcc tgcttggtga tttcagcaag ctacagcaaa gccattggc
1140

agaaaaaaa agacaataat tttgtttttt cattttgaaa aaattaaatg ctctctccta
1200

agattcttc acctaaaaaa
1220

eolf-seql-S000001.txt

:210> 4
:211> 1816
:212> DNA
:213> Homo sapiens

:400> 4
:tcgccttct ggctctgcc tgcctgtct tgaagagaca cccgccattt caccagtaa
60
cgggcccg cctgcggagg tgggcggcat gcagctccgc ttgcccggc tctccgagca
120
gccacggcc cccacccggg gctccgcgcg cgccgcgggc tacgacctgt acagtgccta
180
gattacaca ataccaccta tggagaaagc tggtgtgaaa acggacattc agatagcgct
240
ccttctggg tggtatggaa gagtggctcc acggtcaggc ttggctgcaa aacactttat
300
gatgtagga gctggtgtca tagatgaaga ttatagagga aatgttggtg ttgtactgtt
360
aattttggc aaagaaaagt ttgaagtcaa aaaaggtgat cgaattgcac agtcatttg
420
gaacggatt ttttatccag aaatagaaga agttcaagcc ttggatgaca ccgaaagggg
480
tcaggaggt ttggttcca ctggaaagaa ttaaaattta tgccaagaac agaaaacaag
540
agtcatacc tttttcttaa aaaaaaaaaa aaagtttttg cttcaagtgt tttggtgttt
600
gcacttctg taaacttact agctttacct tctaaaagta ctgcattttt tacttttttt
660
atgatcaag gaaaagatcg ttaaaaaaaaa acacaaagaa gtttttcttt gtgtttggat
720
aaaaagaaa ctttgttttt ccgcaattga aggttgtatg taaatctgct ttgtggtgac
780
tgatgtaaa cagtgtcttc ttaaaatcaa atgtaaatca attacagatt aaaaaaaaaa
840
cctgtattt aactcatatg atctcccttc agcaacttat ttgcttttaa ttgctttaaa
900
cttaagcaa tattttttat tcagtaaaca aattctttca caaggtacaa aatcttgcac
960

eolf-seql-S000001.txt

agctgaact aaaataaaaa tgaaaaggag agattaaagg ttttccttgt tcttcccttc
1020

cttcactag tctaaaaact tctttttaat cttaagattc tttgtgatga gggtagagaaa
1080

agaatcctc agtttatattt tccactatta atctttcttt tgataaatcc tctattgact
1140

ggtagaggt atgtttgtga aagacatgta acttggggat ttgttacttt aggtttgttc
1200

cttgaattt catctcatca ggcaaattgt actagttgta gttacgagtt ttccttcagt
1260

aagtagcaa taggctgtaa tcaagaaaat atgccattta tagagataag ataaatgaaa
1320

aatacttca gccaccaggt ttttctgtct cacatacata agcagcattt cattgcagat
1380

tgggactga ttctgtggct taccttgatt aacatctttt ggaagttttg ctagtgtgct
1440

tcctttctt tactatgttt ctcagattcc tttgtatcag ggttttgggt gtcacttagg
1500

tttgtccat cagattctgt gagacaccag gcacgtttt gaggatgtgg gttatacaca
1560

ggagtgtt ctggaactat cagcccactt gaccaccag tttgtggaag cacaggcaag
1620

gtgttcttt tctgggtgatt ctccaggcca ttaataccc tgcaatgtaa ttgtccctct
1680

tggctcaca tttcattagt gagccatgaa atcaactcag tgggacatag ccagcatttt
1740

gcataccag gttgggctat aaaatatttc tgttgtcaat aaattttaaa tgttttctg
1800

taaaaaaaa aaaaaa
1816

210> 5

211> 4553

212> DNA

213> Homo sapiens

400> 5

cgcgggccg aggacgctc tggggcgga ccgcgtccc agagccccag aagtcggcg
60

eolf-seql-S000001.txt

gaagtttcc ccggtggggg gcgtttcggg cctcccggac ggctctcggc cccggagccc
120

gtcgcagga gcgcggggccc gggggcgga acgcgccgcg gccgcctcct cctccccggc
180

cccgcccgc ggcggtggtg gcggcggcgg tggcggcggc ggcggcgctt ccccggcgcg
240

agcggtttt aaaaggcggc actccacccc ccggcgcaact cgcagctcgg gcgccgcgcg
300

gcctgtcgc cgctatgcct ccgcgcgcgc cgctgcgcc cgggccccgg ccgccgcccc
360

ggccgcccgc cgccaccgac accgcgcgcg gcgcgggggg cgcggggggc gcggggggcg
420

cggcggggc cgggttcggc ccgctcgcgc cgcgtccctg gcgctggctg ctgctgctgg
480

gctgcctgc cgctgctcc gcgccccgc cgcgccccgt ctacaccaac cactgggcgg
540

gcaagtgct gggcgggccc gccgaggcgg accgcgtggc ggcggcgcac gggtagctca
600

cttgggcca gattggaac ctggaagatt actaccattt ttatcacagc aaaaccttta
660

aagatcaac cttgagtagc agaggccctc acaccttcct cagaatggac cccaggtga
720

atggctcca gcaacaggaa gtgaaacgaa gggtagaag acaggtgcga agtgaccgcg
780

ggcccttta cttcaacgac ccatttggg ccaacatgtg gtacctgcat tgtggcgaca
840

gaacagtcg ctgccggtcg gaaatgaatg tccaggcagc gtggaagagg ggctacacag
900

aaaaaacgt ggtggtcacc atccttgatg atggcataga gagaaatcac cctgacctgg
960

cccaaatta tgattcctac gccagctacg acgtgaacgg caatgattat gacccatctc
1020

acgatatga tgccagcaat gaaaataaac acggcactcg ttgtgcggga gaagttgctg
1080

ctcagcaaa caattcctac tgcacgtgg gcatagcgta caatgcaaaa ataggaggca
1140

ccgcatgct ggacggcgat gtcacagatg tggtcgaggc aaagtcgctg ggcacagac

eolf-seql-S000001.txt

1200

caactacat cgacatttac agtgccagct gggggccgga cgacgacggc aagacggtgg
1260

cgggcccgg ccgactggct aagcaggctt tcgagtatgg cattaataag ggccggcagg
1320

cctgggctc cattttcgtc tgggcatctg ggaatggcgg gagagagggg gactactgct
1380

gtgcatgg ctacaccaac agcatctaca ccatctccgt cagcagcgcc accgagaatg
1440

ctacaagcc ctggtacctg gaagagtgtg cctccaccct ggccaccacc tacagcagtg
1500

ggcctttta tgagcgaaaa atcgtcacca cggatctgcg tcagcgctgt accgatggcc
1560

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1620

aaacagcca gttaacctgg agggacgtcc agcacctgct agtgaagaca tcccggccgg
1680

ccacctgaa agcgagcgac tggaaagtga acggcgcggg tcataaagtt agccatttct
1740

tggatttgg tttggtggac gcagaagctc tcgttgtgga ggcaaagaag tggacagcag
1800

gccatcgca gcacatgtgt gtggccgcct cggacaagag acccaggagc atccccttag
1860

gcaggtgct gcggactacg gccctgacca gcgcctgcgc ggagcactcg gaccagcggg
1920

ggtctactt ggagcacgtg gtggttcgca cctccatctc acaccacgc cgaggagacc
1980

ccagatcta cctggtttct ccctcgggaa ccaagtctca acttctggca aagaggttgc
2040

ggatctttc caatgaaggg ttacaaaact gggaattcat gactgtccac tgctggggag
2100

aaaggctga agggcagtgg accttgaaa tccaagatct gccatcccag gtccgcaacc
2160

ggagaagca agggaagttg aaagaatgga gcctcactat gtatggcaca gcagagcacc
2220

gtaccacac cttcagtgcc catcagtccc gctcgcggat gctggagctc tcagccccag
2280

eolf-seql-S000001.txt

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2340

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2460

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2760

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2880

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3180

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3240

cagagggca ggcactccca tccatccatc cgtccacctt cctccagact gtcggccaga
3300

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3360

eolf-seql-S000001.txt

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3420

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3480

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3540

:aagaccaaa gcagaaaaga aaggcgcttg gcatcacaca tcactcttct ccccgctgctt
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3660

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eolf-seql-S000001.txt

4500

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4553

:210> 6

:211> 2691

:212> DNA

:213> Homo sapiens

:400> 6

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60

gcggtctgct ggctctcgcc ctggctctgg ccctggggccc cgccgcgacc ctggcgggctc
120

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180

ccccaacgt gtgtgctgtg cagaaggta ttggcactaa taggaagtac ttcaccaact
240

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300

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360

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420

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480

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540

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600

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660

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720

caacgggggt ggtgcacctc atcgataagg tcctctccac catcaccaac aacatccagc
780

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840

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eolf-seql-S000001.txt

900

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960

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1020

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1080

tatcaacgg gaaggcgatc atctccaata aagacatcct agccaccaac ggggtgatcc
1140

ctacattga tgagctactc atcccagact cagccaagac actatttgaa ttggctgcag
1200

gtctgatgt gtccacagcc attgaccttt tcagacaagc cggcctcggc aatcatctct
1260

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1320

tccaattga tgcccataca aggaatttgc ttcggaacca cataattaaa gaccagctgg
1380

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1440

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1500

ggggaggta cgggaccctg ttcacgatgg accgggtgct gacccccca atggggactg
1560

catggatgt cctgaaggga gacaatcgct ttagcatgct ggtagctgcc atccagtctg
1620

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1680

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1740

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1800

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1860

ggtgagtgt caacaaggag cctgttgccg agcctgacat catggccaca aatggcgtgg
1920

ccatgtcat caccaatgtt ctgcagcctc cagccaacag acctcaggaa agaggggatg
1980

eolf-seq1-S000001.txt

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2100

tgaagcact acaggaggaa tgcaccacgg cagctctccg ccaattttctc tcagatttcc
2160

cagagactg tttgaatgtt ttcaaaacca agtatcacac tttaatgtac atgggccgca
2220

cataatgag atgtgagcct tgtgcatgtg ggggaggagg gagagagatg tactttttaa
2280

tcatgttcc ccctaaacat ggctgttaac ccaactgcatg cagaaacttg gatgtcactg
2340

ctgacattc acttccagag aggacctatc ccaaattgtg aattgactgc ctatgccaaag
2400

ccctggaaa aggagcttca gtattgtggg gctcataaaa catgaatcaa gcaatccagc
2460

tcatgggaa gtcctggcac agtttttgta aagcccttgc acagctggag aaatggcatc
2520

ttataagct atgagttgaa atgttctgtc aaatgtgtct cacatctaca cgtggcttgg
2580

ggcttttat ggggccctgt ccaggtagaa aagaaatggt atgtagagct tagatttccc
2640

attgtgaca gagccatggt gtgtttgtaa taataaaacc aaagaaacat a
2691

210> 7

211> 3600

212> DNA

213> Homo sapiens

400> 7

gtggagctg tcgcctagcc gctatcgcat agtggagcgg ggctgggagc aaagcgctga
60

ggagctcgg tacgccgccg cctcgcaccc gcagcctcgc gcccgccgcc gcccgctccc
120

jagaaccat ggagtctggc agtaccgccg ccagtgagga ggcacgcagc cttcgagaat
180

cgagctcta cgtccagaag cataacattc aagcgctgct caaagattct attgtgcagt
240

eolf-seql-S000001.txt

gtgcactgc tcgacctgag agacccatgg cattcctcag ggaatacttt gagaggttgg
300

gaaggagga ggcaaaacag attcagaatc tgcagaaagc aggcactcgt acagactcaa
360

ggaggatga gatttctcct cctccaccca acccagtggg taaaggtagg aggcgacgag
420

cgctatcag cgctgaggtc tacacggagg aagatgcggc atcctatgtt agaaaggtta
480

acaaaaaga ttacaagaca atggccgctt tagccaaagc cattgaaaag aatgtgctgt
540

ctcacatct tgatgataat gagagaagtg atatTTTTga tgccatgttt tcggtctcct
600

atcgcagg agagactgtg attcagcaag gtgatgaagg ggataacttc tatgtgattg
660

caaggaga gacggatgtc tatgttaaca atgaatgggc aaccagtgtt ggggaaggag
720

jagctttgg agaacttgct ttgatttatg gaacaccgag agcagccact gtcaaagcaa
780

jacaaatgt gaaattgtgg ggcacgacc gagacagcta tagaagaatc ctcatgggaa
840

acactgag aaagcggaag atgtatgagg aattccttag taaagtctct attttagagt
900

ctggacaa gtgggaacgt cttacggtag ctgatgcatt ggaaccagtg cagtttgaag
960

gggcagaa gattgtggtg caggggagaac caggggatga gttcttcatt attttagagg
1020

tcagctgc tgtgctacaa cgtcggtcag aaaatgaaga gtttgttgaa gtgggaagat
1080

gggccttc tgattatTTT ggtgaaattg cactactgat gaatcgctcct cgtgctgcc
1140

gttggtgc tcgtggcccc ttgaagtgcg ttaagctgga ccgacctaga tttgaacgtg
1200

cttgccc atgctcagac atcctcaaac gaaacatcca gcagtacaac agttttgtgt
1260

ctgtctgt ctgaaatctg cctcctgtgc ctcccttttc tcctctcccc aatccatgct
1320

eolf-seql-S000001.txt

cactcatgc aaactgcttt attttccta ctgcagcgc caagtggcca ctggcatcgc
1380

gcttctgt ctgtttatat attgaaagt gcttttattg caccattttc aatttgagc
1440

tttaactaaa tgctcataca cagttaaata aatagaaaga gttctatgga gactttgctg
1500

tactgcttc tctttgtgca gtgtagtat tcaccctggg cagtgagtgc catgcttttt
1560

gtgagggca gatcccagca cctattgaat taccatagag taatgatgta acagtgcaag
1620

ttttttttt taagtgcacat aattgtccag ttataagcgt atttagactg tggccatata
1680

gctgtattt cttttagtaa taaatgggtt ctcatataac tctaaagatt agggaaaatg
1740

atatagaaa atcttagtat agtagaaaga catctgcctg taattaaact agtttaaggg
1800

ggaaaatg cccatttttg ctaattatca atgggatatg attgggtcag ttttttttt
1860

ccagagttg ttgtttgcca agctaactctg cctgggttta tttatatctt gttattaatg
1920

ttcttctcc aattctgaaa tacttttgag tatggctatc tatacctgcc ttttaagttt
1980

aaactaact catagattgc aaatattggt tagtatttaa ctacatctgc ctcggtcac
2040

aattccgat tagaccttta tccagctagt gccaaataat tgatcagatg ctgaattgag
2100

ataagaatt tgaggtctac attcttggtt gttaatttag agcgtttggt taaagtatgt
2160

cttcagctg actccagtat aatctcctct gtcattaaa ctgattccag gagattggat
2220

tgctgtgac tagatacaga tggagcaaata gtcctaacag agaaatagag gtgatgctgc
2280

aaagggaga aatgccaggc ggacaaagt cagtgtcggg aattttcccc gtgacattca
2340

tggggcatg agattttgga agaagttttt tacttttggt tagtcttttt ttccttctt
2400

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eolf-seql-S000001.txt

2460

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2520

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2580

tttcagtat tttccagcct tatgtgttac attattccaa tgatacccaa cagtttattt
2640

tattattttt tttaaacaaa atttcacagt tctgtaatgt aggcactttt attttcattg
2700

gatttatat ataaggtaat gtagggttat atttgggagt gactgcaagc atttttccat
2760

tggttgcaa ctaactgact ctgttattga tcccttctcc tgccctttcc caggtaattt
2820

aattggtca tggtagattt ttttcataga ttgaaaaac ttttaggttg ttaccaagta
2880

gaagtataa atctggggaa gaggttttat ttacatttta gggtaggtaa gaaagccacc
2940

tgttacaaa ttttttaatt tccaaaataa tctatattaa atgagggttt ctgatctgta
3000

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3060

gcttaaagc ttgatttgat ctttgtttaa atgccaaaat gtacttaaatt gagttactta
3120

aatgccata aaattgcagt ttcattgtat tatataatca tgctcatgta tatttagtta
3180

gtataatgc tttctgagtg agttttactc ttaaattcatt tgggttaaattc atttggcttg
3240

tgtttactc ccttctgtag tttttaatta aaaactttaa agataagtct acattaaaca
3300

tgatcacat ctaaagcttt atctttgtgt aatctaagta tatgtgagaa atcagaattg
3360

cataatttg tcttagttga tattcaaggc tttaaaagtc attattcctg ggcttggttaa
3420

tgaatttat gagatttact gctctagaaa gtatagatgg cgaaaggacc gttttgtatt
3480

cttcctgat taccagtctg attataccat gtgtgctaata atactttttt tgttatagat
3540

eolf-seql-S000001.txt

gtcttaatg gtaggtcaag taataaaaag agatgaaata atttaaaaaa aaaaaaaaaa
3600

210> 8

211> 1434

212> DNA

213> Homo sapiens

400> 8

agccctgt ctggatgact tcttgcggt gttctacccc tccccctccc cgcggtacct
60

gcacttttc tccctccctg cccctctctg agtccaccct ccgggccttc tgccctgat
120

gcttggttt tccttgcaat cgctgctgc tgctgctggg aggaagatg aatgggaggg
180

tgattttcg agagccgaat gcagaggttc caagaccaat tccccacata gggcctgatt
240

cattccaac agaggaagaa aggagagtct tcgcagaatg caatgatgaa agcttctggt
300

cagatctgt gcctttggct gcaacaagta tgttgattac tcaaggatta attagtaaag
360

aatactttc aagtcacccc aaatatggtt ccatccctaa acttatactt gcttgtatca
420

gggatactt tgctggaaaa ctttcttatg tgaaaacttg ccaagagaaa ttcaagaaac
480

tgaaaattc ccccttgga gaagctttac gatcaggaca agcacgacga tcttcaccac
540

tgggcacta ttatcaaaag tcaaaatatg actcaagtgt gagtggtcaa tcatcttttg
600

gacatcccc agcagcagac aacatagaaa tgcttcctca ttatgagcca attccattca
660

ttcttctat gaatgaatct gctcccactg gtattactga tcatattgtc caaggacctg
720

tcccaacct tgaagaaagt cctaaaagaa aaaatattac atatgaggaa ttaaggaata
780

jaacagaga gtcatatgaa gtatctttta caaaaagac tgaccctca gtcaggccta
840

gcataaag agtgccaaaa aaagaagtca aagtaaaca gtatggagat acttgggatg
900

eolf-seql-S000001.txt

gtgaaaaat tacatcattg gacatgaagg agtttcaaca tccagcttca tctaggtggt
960

atgattacc tgcattgcttt gagctcagca gcagtcttca taaacacatt taaaacaaga
1020

cctggggttt ttgtgggttg acttctatgg tgtttttaaaa aaacacagat ttttagtggt
1080

atattgtgt aaatgtactc accttaggga ttcatttgaa tgatggtatt ataccatgat
1140

gtatacagt ttgtgaaatt gttgcaaggg caaagataac tcttaaaaaa ccgtcgagat
1200

acaatgctc tagaatcagc atataagaaa ataaatgata tctgcatgtt gaattgggggt
1260

gatgggggg agcaagcata atttttaagt gtgaagcttt gcatcaagaa attattaaaa
1320

gtttttttt ctccagtatt ttctgtatta tcttaatgtt tatggcaaata aaaatgtaaa
1380

gaacatgcc aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaa
1434

?10> 9

?11> 1414

?12> DNA

?13> Homo sapiens

!00> 9

gattgagga acccatttcc tcattctgca aattgcaaac ctgagggccc aaagagggac
60

ggggcttgc caggtctcag caggctgtga gcaagagcta aagcctaata ctctgcctt
120

ggctggag ccttccttgt accccagggg cagtgtcttt gttggataca ggcttagatt
180

ctgactgt accctgagaa cctaggggag tcctgttcc caattcttct cctaccccca
240

ttggcctg atggaggaag accctgctgt gttgagatga gcaccagagc caagaagctg
300

gaggatct ggagaattct ggaggaagag gagagtgttg ctggagctgt acagaccctg
360

tctcaggt cccaggaagg tggcgtcaca tctgcagccg cgtcgacgtt gtcggagcct
420

eolf-seql-S000001.txt

:cgcgaggga cccaggagag ccggactagg accaggggccc tgggcctccc cacactcccc
480

ttggagaagc tggcggcctc tacagagccc caagggcctc ggccggctct gggccgtgag
540

gtgtccagg tgcccgatga ccaagacttt cgcagcttcc ggtcagagtg tgaggctgag
600

ttgggctgga acctgacctc tagcagggtc ggggtgtctg tctgggtgca ggctgtggag
660

tggtatcgga cgctgcacaa gatcaagtgc cggatggagt gctgtgatgt gccagccgag
720

cactctacg acgtcctaca cgacattgag taccgcaaga aatgggacag caacgtcatt
780

agacttttg acatcgcccc cttgacagtc aacgtgacg tgggctatta ctctggagg
840

gtcccaagc ccctgaagaa ccgtgatgtc atcacctcc gctcctggct ccccatgggc
900

ctgattaca tcattatgaa ctactcagtc aaacatccca aatacccacc tcggaaagac
960

tggtccgag ctgtgtccat ccagacgggc tacctcatcc agagcacagg gcccaagagc
1020

gcgtcatca cctacctggc ccaggtggac cccaaaggct ccttaccxaa gtgggtgggtg
1080

ataaatctt ctcagttcct ggctcccaag gccatgaaga agatgtacaa ggcgtgcctc
1140

agtaccccg agtggaacaa gaagcacctg cctcacttca agccgtggct gcacccggag
1200

agagcccggt tgccgagcct ggcgtgtctg gagctgtcgg tgcagcatgc ggactcactg
1260

agaacatcg acgagagcgc ggtggccgag agcagagagg agcggatggg cggcgcgggc
1320

gcgagggca gcgacgacga cacctcgctc acctgagcga cgcaccgctt cagggacgga
1380

acaggaccg gcggagccct ggggcggcgg ccgc
1414

210> 10

211> 1262

eolf-seql-S000001.txt

:212> DNA

:213> Homo sapiens

:400> 10

:ctctcgca gatccctact ggctataaag gcagcgcccc ggagagctct tgcgcgtctt
60:ttcttgct ggtgtcgggt gttagtttct gcgacttggt ttgggactgg tgagtgtggg
120:agtgcggcc cctgcggagt gaggcgcggc gcgcccttct tgccgtttgc ctcttcctcc
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360:attgggcac cctgccccca acttcaaagc cacagctgtt atgccagatg gtcagtttaa
420:gatatcagc ctgtctgact acaaaggaaa atatgttggt ttcttctttt accctcttga
480:ttcaccttt gtgtgcccc aaggagatcat tgctttcagt gatagggcag aagaatttaa
540:aaactcaac tgccaagtga ttggtgcttc tgtggattct cacttctgtc atctagcatg
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660:ccgaagcgc accattgctc aggattatgg ggtcttaaag gctgatgaag gcctctcgtt
720:aggggcctt ttatcattg atgataaggg tattcttcgg cagatcactg taaatgacct
780:cctgttggc cgctctgtgg atgagacttt gagactagtt caggccttcc agttcactga
840:aaacatggg gaagtgtgcc cagctggctg gaaacctggc agtgatacca tcaagcctga
900:gtccaaaag agcaaagaat atttctccaa gcagaagtga gcgctgggct gttttagtgc
960:aggctgcgg tgggcagcca tgagaacaaa acctcttctg tatttttttt ttccattagt
1020

eolf-seq1-S000001.txt
aaacacaag acttcagatt cagccgaatt gtggtgtctt acaaggcagg cctttcctac
1080
gggggtgga gagaccagcc tttcttcctt tggtaggaat ggcctgagtt ggcgttgtgg
1140
caggctact ggtttgtatg atgtattagt agagcaacc attaatcttt tgtagtttgt
1200
ttaaacttg aactgagacc ttgatgagtc tttaaaaaaa aaaaaaaaaa aaaaaaaaaa
1260
a
1262

210> 11
211> 4108
212> DNA
213> Homo sapiens

400> 11
ctccagcac catgtctggt ttgtctggcc caccagcccg gcgcggccct tttccgtag
60
gttgctgct tttgttcctg ctgggccccca gattggctct tgccatctcc ttccatctgc
120
cattaactc tcgcaagtgc ctccgtgagg agattcaciaa ggacctgcta gtgactggcg
180
gtacgagat ctccgaccag tctggggggcg ctggcggcct gcgcagccac ctcaggatca
240
agattctgc tggccatatt ctctactcca aagaggatgc aaccaagggg aaatttgcct
300
taccactga agattatgac atgtttgaag tgtgttttga gagcaaggga acagggcgga
360
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420
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480
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600
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660

eolf-seql-S000001.txt

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720

gctgggacg tgccctggcct aaggcatcct accaacagca ccatcaaggc acgttggagc
780

ttcttgcca gaactgatct cttttggtgt gggaggacat ggggtaccac ctacacccaa
840

aagtcaatg agggacttct ttttaatttg gtaggatttt gactggtttt gcaacaatag
900

tctattatt agagtcacct atgacaaaaa ataggggtta cctagataat gccaaagtca
960

catttgtec cgggttcctt tgtgtgatct gtttggacta tgttttcttt tcttctccca
1020

ttgctcagc agcttgggct tccattctag ttcttttacc aagatttttg tgtgaccatg
1080

tgacttcat ttggattgcc ctctttcaat ttctttgtga aaacaccctt aactttctct
1140

tacccttag ctgaaatggt tacatagctt ctggtgatat cttttcatga ttttatatct
1200

ttaaaatgg tgatggatgt gacacctcat aaaagtgagc tttgaactgt agataactct
1260

aaagaaaat gtcatttttag acaattaaaa tatttggtgt caactgcttg aacttttttc
1320

tgtatgtgt atttaattct atgcaatatt atcacatgtg tagattcatg tgaccaccat
1380

acaagagac agaacagttc tgtcacatgg atcccttgca ctgccctttt acagccgcag
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cacatccct ttcttatacc ctcaccccaa cctgtggcta ccaactgttct gtcctccatc
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1560

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1620

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1680

acagatttc ttacatgcat atattgcac gtggtgaagt gggggcagtt ctttttgatt
1740

ctgagtagt attccatggt atggatgtac cacagtttgc ttaaccattc acccactaaa

eolf-seql-S000001.txt

1800

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1860

ggtttttat gtgaacatac attttcattt tctgggataa atgctcaaaa gggcaactgt
1920

gggttgtat ggtaaacaca tatatttttg taagaaacta ccctactctt tttccagagt
1980

gctctaactt tttacatata gccactcata caattcagac agcaatgtat gattgatcca
2040

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2100

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2160

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2220

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2280

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2400

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2520

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2580

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2640

ccacatctc ccaagaaagt aggtaggagt ttatcctttc cgtaatctct ttttaaccct
2700

ctgactatt acagggttg tttaatcaca gtggcaagaa ttacatgtat cttacagtaa
2760

jaaacagaa tactggaatc gttagagaac cctgatgtgt tgacctggat aaagtacaaa
2820

gtggaagag ggaatgagtt atgctgttaa aatctcaggc tattctgtta atgttcctgc
2880

eolf-seql-S000001.txt

actatgaac ccaaactttt tttttccccc ttttgactcc ttgtgtcttc ctctcctgtg
2940

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3000

ggtactgct tctgagaacc tggctgcaga tccttagcat aggcagcaaa tgttgagaaa
3060

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3120

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3180

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3240

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3300

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3480

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3600

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3660

taaacttaa gctttgtagg agttgacatt ctttcatgtc ccttcccttt actcatgccg
3720

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3840

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3900

gtataatat aaatgagaat gatgcagttt aagtaagcct tgttatacca ttgtcatgga
3960

eolf-seql-S000001.txt
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ttcacttgt aaatgttgga ttggggattt ttgtgtaaatt tttctcaaatt aaaggctagc
4080
gaaaccgaa aaaaaaaaaa aaaaaaaaa
4108

210> 12
211> 5767
212> DNA
213> Homo sapiens

400> 12
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420
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540
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720
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780

eolf-seql-S000001.txt

agaaatatg gaatacagat gccatctttc agcaaaatag gtggtattct ggccaatgaa
840

tgtccgtgg atgaagctgc attacatgct gcagttatag ccattaatga agcagttgaa
900

aaggaatag cagagcaaac cgttgtaaca ctaagaaacc caaatgcggt tttaacttta
960

tggatgaca accttgcacc agaatatcag aaagaactct gggatgccaa aaagaaaaaa
1020

aggaaaatg caagactgaa gaatagctgt atttcagaag aagaaagaga tgcttatgaa
1080

aactgctga cacaagcaga aatccaaggc aatattaata aagtcaacag gcaggctgca
1140

ggaccata tcaatgctgt cattccggaa ggtgaccccg agaatacgtc gcttgcaactg
1200

agaaaccag aggcccagct gcctgctgtt tatccctttg ctgctgccat gtatcagaac
1260

aacttttca acctccagaa acagaacacc atgaactact tggcccacga ggagcttttg
1320

tgctgtgg aaatgttgct tgctgttgct ttactaaacc aggcttgga aagcaacgat
1380

tggtgtctg tgcagaatca actcagaagc cccgcaatag gcttaaaca tctggacaag
1440

atatgtgg aacgttatgc aaacacacta ctctctgtta aactagaagt tttatcccaa
1500

gcaagata acttaagctg gaatgaaatt cagaattgta ttgatatggg taatgctcaa
1560

tcaagaag aaaatgaccg agttgtagct gtaggggtaca tcaatgaagc tattgatgaa
1620

gaatcctt tgaggacttt agaaactttg ctctaccta ctgcgaatat tagtgatgtg
1680

cccagccc atgccagca ctaccaggat gttttataacc atgctaaatc acagaaactc
1740

agactctg agagtgtttc caaagtgctt tggctggatg agatacagca agccgtcgat
1800

ggccaacg tggacgagga cagagcaaaa caatgggtta ctctgggtggg tgatgttaat
1860

gtgtttgg aaggaaaaaa atcaagtgat attttgtctg tattgaagtc ttccacttct

eolf-seql-S000001.txt

1920

atgcaaatg acataatccc ggagtgtgct gacaaatact atgatgccct tgtgaaggca
1980

aagagctca aatctgaaag agtgtctagt gacggttcat ggctcaaact caacctgcac
2040

aaaaatatg actactatta caacactgat tcaaaagaga gttcctgggt cacacctgaa
2100

catgcttct ataaagaatc atggctcaca ggaaaagaaa tcgaggacat tattgaggaa
2160

tcacagtag gttacattcg tgagaatata tggctctgctt cagaagagtt gcttcttcgc
2220

ttcaagcca caagctcagg acccatcctt agggaagagt ttgaagctag aaaatcattt
2280

tgcataaac aagaagagaa tgtggtcaaa atacaggctt tttggaaagg atataaacia
2340

ggaaggagt atatgcacag gcggcaaacg ttcattgata atactgattc tgttgtgaag
2400

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2460

tcagagatc ataataatga aattgtgaaa atacagtcac tgttgagagc gaacaaagct
2520

gagatgact acaaaacatt ggttggtctt gaaaaccac cattaacagt aattcgcaaa
2580

ttgtatacc tgctggacca aagtgatttg gatttccagg aggaactaga ggttgcacga
2640

taagggaag aagtagtgac caagatcagg gccaatcaac agctggaaaa agacctgaac
2700

tgatggaca tcaagattgg actgctggtg aagaacagga tcacactaga ggatgtaatt
2760

acacagta aaaagctgaa caagaaaaaa ggaggagaaa tggaaatact gaataacacc
2820

acaaccaag gaataaaaag tttgagtaag gagaggagaa aaacactaga aacatatcag
2880

agctgtttt accttttaca gaccaaccct ttatacttgg ctaagctgat tttccagatg
2940

acagaaca agtccactaa atttatggat actgttattt tcacactata taattatgcc
3000

eolf-seql-S000001.txt

taatcagc gagaagaata tctacttctc aagcttttta aaactgctct ggaggaagaa
3060

aaaatcaa aagtggacca ggtacaggac atagttactg gtaaccctac agtcatcaag
3120

ggtcgtca gcttcaatag aggtgcccg ggacagaaca ccctgcgcca actcctggct
3180

agtggtaa aagagatcat cgacgacaag tcgctgatta tcaacacaaa ccctgtagag
3240

gtacaagg cttgggtgaa ccaactagaa acacagactg gagaggccag caagttgcct
3300

tgatgtga ccacagaaca agctctaaca taccagaag tgaaaaataa actggaggct
3360

cattgaga acctgagaag ggtcaccgac aaagtctga attctatcat ttcttcctt
3420

tctactgc cttatggatt gaggtatata gccaaagtac tgaagaattc gatccatgag
3480

attccccg atgcaacaga agatgagcta ttaaagattg ttggaaacct cctgtactat
3540

gtacatga atccagccat tgtagctcca gatggctttg atatcatga catgacagct
3600

aggtcaga taaattctga ccaaaggaga aacttaggat cagtggccaa ggttcttcag
3660

cgagcct ccaacaagct gtttgaagga gaaaatgagc atctctcatc tatgaacaat
3720

tttatcag agacgtatca ggaattcagg aaatatttca aagaagcatg taatgtccct
3780

gccagaag agaagtttaa tatggacaaa tacacagacc tggtgacagt cagcaaacca
3840

catttata tttcaattga agaaatcatc agcacacact cactcctgtt ggaacaccag
3900

tgcaattg ccctgagaa aaatgactta ctgagtgaat tgctggggtc gctgggagag
3960

gccaaccg tggaatcttt tcttggggaa ggagcagttg accccaatga ccctaacaag
4020

aaatacac taagtcagct ttcaaagacc gagatttctc ttgtcttgac aagcaaatat
4080

eolf-seql-S000001.txt

acatagagg acggtgaagc tatagatagc cgaagcctca tgataaagac caagaagctg
4140

taattgatg tgatccggaa ccagccaggg aacacattga cagaaatctt agagacacca
4200

caactgcgc aacaggaggt agaccatgcc acggacatgg tgagccgtgc aatgatagat
4260

ccaggactc cagaagaaat gaagcatagc caatctatga ttgaagatgc acagctgcct
4320

ttgagcaga agaagaggaa aatccagagg aatcttcgga cgttggaaca gactggacac
4380

tgtcatccg aaaataaata ccaagacatt ctcaatgaga ttgccaagga tattcgaaat
4440

aaagaatct atcgtaagct tcgaaaagct gaattggcaa aacttcagca gaccctgaat
4500

cacttaaca agaaggcagc attttatgaa gagcaaatca attattatga cacctacata
4560

agacttggt tagacaactt aaaaagaaaa aatactcgga gatcaattaa actagatgga
4620

aaggagaac ccaaaggggc gaagagagcg aagccagtga agtacactgc agcaaagctg
4680

atgagaaag gtgtcctgct agatatagat gatcttcaaa caaaccagtt taagaatggt
4740

catttgata tcatagctac tgaagatgta ggcattttcg atgtaagatc aaaattcctt
4800

gtgttgaga tggaaaaggt gcaactcaat attcaggatt tacttcagat gcaatatgaa
4860

jagtagctg taatgaaaat gtttgataag gttaaagtga atgtaaacct tctcatatac
4920

tgctgaaca agaagttcta tggaaagtga agtgcctaca gaaatttctt ggattctgta
4980

atctggat taggaaatga atttgtttaa tatttttggt tttaaakatg attgaaatca
5040

gcttataa atgtgtgatt ttttttaa at gacaaaaact gttctgaaga atgtaccag
5100

gccttttt gctaatttga tactataata gaatgagaca taaaatgaat taatggaaac
5160

atccacac tgtactgtga tataggtact ctgattttaa actttggaca tcctgtgatc

eolf-seql-S000001.txt

5220

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5280

cctatgaaa aaagtttttaa atgtcccact tgaataacgt aattcttcat agttttttta
5340

ttctatggat aaatggaaac ctaattattt gtaatgaatt atttagacag ttctaagccc
5400

gtcttctgg gagttatcaa ttttaaagag aacttttgtg caattcaaatt gaagttttta
5460

aagtaattg aaaatgacaa cacaataaca ctttctgtat aaaagtatat attttatgtg
5520

tttattcct actaaatgaa agtgcactac tgccctcatgt aaagactctt gcacgcagag
5580

ctttaagtg actaaggaac aacatagata gtgagcatag tccccacctc caccctcac
5640

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5700

tagatgggt tttaaatgta ttctctggaa attgttttat gtaaaataaa tggtacttaa
5760

tccatt
5767

210> 13
211> 1148
212> DNA
213> Homo sapiens

400> 13
ctcggtcgg gcgctgtctc cctcggctct gcgggtgtca gttcgtccgg cttcctcaca
60

cccctcact cccggcggct gacagcagca gcggcggcgg cgggcggcgc ctggcgtttc
120

aggctgagc ggcaccgggg ttggggcgcg gaggaggagc agcagcggga ggaggagccg
180

gtgccctgg cactgagcgg ccgcggccat ggcgtacgcc tatctcttca agtacatcat
240

atcggcgac acaggtgttg gtaaatacatg cttattgcta cagtttacag acaagaggtt
300

cagccagtg catgacctta ctattggtgt agagttcggg gctcgaatga taactattga

eolf-seql-S000001.txt

360

:gggaaacag ataaaacttc agatatggga tacggcaggg caagaatcct ttcgttccat
420

:acaaggtcg tattacagag gtgcagcagg agctttacta gtttacgata ttacacggag
480

:gatacattc aaccacttga caacctgggt agaagatgcc cgccagcatt ccaattccaa
540

:atgggtcatt atgcttattg gaaataaaaag tgatttagaa tctagaagag aagtaaaaaa
600

:gaagaaggt gaagcttttg cagcagaaca tggactcatc ttcattggaaa cgtctgctaa
660

:actgcttcc aatgtagaag aggcatttat taatacagca aaagaaattt atgaaaaaat
720

:caagaagga gtctttgaca ttaataatga ggcaaattggc attaaaattg gccctcagca
780

:gctgctacc aatgcaacac atgcaggcaa tcagggagga cagcaggctg ggggcggctg
840

:tgttgagtc tgtttttact gtctagctgc ccaacggggc ctactcactt attctttcac
900

:ccctctcct cctgctcagc tgagacatga aactatttga aatggcttta tgtcacagaa
960

:actttaatc cgtcaaattc ttgtataact ttgaataaat ggtaaatgtt cacttaaaag
1020

:cagattttg gagattgtat tcatatctat ttgcatttga tttctaggctc aattgatgtg
1080

:ttatttttg ttaaattgtg tcttgtgccc ttaactacga actgaattgt attaaacact
1140

caaagtc
1148

210> 14

211> 1814

212> DNA

213> Homo sapiens

400> 14

caaaaccaa cgctggctc ggagcagcag cctctgaggt gtccctggcc agtgtccttc
60

acctgtcca caagcatggg gaacatcttc gccaacctct tcaagggcct ttttggcaaa

eolf-seql-S000001.txt

120

aagaaatgc gcacccatcat ggtgggcctg gatgctgcag ggaagaccac gatcctctac
180

agcttaagc tgggtgagat cgtgaccacc attcccacca taggcttcaa cgtggaaacc
240

tggagtaca agaacatcag cttcactgtg tgggacgtgg gtggccagga caagatccgg
300

ccctgtggc gccactactt ccagaacaca caaggcctga tcttcgtggt ggacagcaat
360

acagagagc gtgtgaacga ggcccgtgag gagctcatga ggatgctggc cgaggacgag
420

tccgggatg ctgtcctcct ggtgttcgcc aacaagcagg acctcccaa cgccatgaat
480

cggccgaga tcacagacaa gctggggctg cactcactac gccacaggaa ctggtacatt
540

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600

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660

cactctcat gtggcaaacg tgcggctcgt ggtgtgagtg ccagaagctg cctccgtggt
720

cggtcaccg tgtgcatcgc accgtgctgt aaatgtggca gacgcagcct gcggccaggc
780

ttttattta atgtaaataag tttttgtttc caatgaggca gtttctggta ctctatgca
840

cattactca gcttttttta ttgtaaaaag aaaaatcaac tcactgttca gtgctgagag
900

gcatgtagg cccatgggca cctggcctcc aggagtcgct gtgttgggag agccggccac
960

cccttggtc tagagctgtg ttgaaatcca ttttggtggt tggttttaac ccaaactcag
1020

ccatttttt aaaatagtta agaatccaag tcgagaacac ttgaacacac agaagggaga
1080

ccgcctag catagatttg cagttacggc ctggatgcca gtcgccagcc cagctgttcc
1140

tcgggaac atgaggtggt ggtggcgag cagactgcga tcaattctgc atggtcacag
1200

eolf-seql-S000001.txt

agagatccc cgcaactcgc ttgtccttgg gtcaccctgc attccatagc catgtgcttg
1260

ccctgtgct cccacggttc ccaggggcca ggctgggagc ccacagccac cccactatgc
1320

gcaggccgc cctaccaccc ttcaggcagc ctatgggagc caggcccat ctgtccctcg
1380

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1440

caggatgtc tggggcctca ccagcaggag cgcgtgcaag ccgggcaggc ggtccaccta
1500

accacagc ccctcgggag caccacacct ctgtgtgtga tgtagctttc tctccctcag
1560

ctgcaaggg tccgatttgc catcgaaaaa gacaacctct acttttttct tttgtatttt
1620

ataaacact gaagctggag ctgttaaatt tatcttgggg aaacctcaga actggtctat
1680

cggtgtcgt aggaacctct tactgctttc aatacacgat tagtaatcaa ctgttttgta
1740

acttgtttt cagttttcat ttcgacaaac aagcactgta attatagcta ttagaataaa
1800

ctcttaac tatt
1814

!10> 15

!11> 2912

!12> DNA

!13> Homo sapiens

!00> 15

gttgcttc agcgtcccgg tgtggctgtg ccgttggtcc tgtgcgggtca cttagccaag
60

gcctgagg aaaccagac ccaagaccaa ccgatggagg aggaggaggt tgagacgttc
120

ctttcagg cagaaattgc ccagttgatg tcattgatca tcaatacttt ctactcgaac
180

agagatct ttctgagaga gctcatttca aattcatcag atgcattgga caaaatccgg
240

tgaaactt tgacagatcc cagtaaatta gactctggga aagagctgca tattaacctt
300

eolf-seql-S000001.txt

taccgaaca aacaagatcg aactctcact attgtggata ctggaattgg aatgaccaag
360

ctgacttga tcaataacct tggtaactatc gccaaagtctg ggaccaaagc gttcatggaa
420

ctttgcagg ctggtgcaga tatctctatg attggccagt tcggtgttgg tttttattct
480

cttatttgg ttgctgagaa agtaactgtg atcaccaaac ataacgatga tgagcagtac
540

cttgggagt cctcagcagg gggatcattc acagtgagga cagacacagg tgaacctatg
600

gtcgtggaa caaaagttat cctacacctg aaagaagacc aaactgagta cttggaggaa
660

gaagaataa aggagattgt gaagaaacat tctcagttta ttggatatcc cattactctt
720

ctgtggaga aggaacgtga taaagaagta agcgatgatg aggctgaaga aaaggaagac
780

aagaagaag aaaaagaaaa agaagagaaa gagtgcggaag acaaacctga aattgaagat
840

ctggttctg atgaggaaga agaaaagaag gatggtgaca agaagaagaa gaagaagatt
900

aggaaaagt acatcgatca agaagagctc aacaaaacaa agcccatctg gaccagaaat
960

ccgacgata ttactaatga ggagtaggga gaattctata agagcttgac caatgactgg
1020

agatcact tggcagtga gcatTTTTca gttgaaggac agttggaatt cagagccctt
1080

catttgtcc cagcagctgc tccttttgat ctgtttgaaa acagaaagaa aaagaacaat
1140

caaatgt atgtacgcag agttttcatc atggataact gtgaggagct aatccctgaa
1200

ttctgaact tcattagagg ggtggtagac tcggaggatc tcctctaaa catatcccgt
1260

gatgttgc aacaaagcaa aattttgaaa gttatcagga agaatttggc caaaaaatgc
1320

agaactct ttactgaact ggcggaagat aaagagaact acaagaaatt ctatgagcag
1380

eolf-seql-S000001.txt

ctctaaaa acataaagct tggaatacac gaagactctc aaaatcggaa gaagctttca
1440

agctgttaa ggtactacac atctgcctct ggtgatgaga tggtttctct caaggactac
1500

gcaccagaa tgaaggagaa ccagaaacat atctattata tcacaggatga gaccaaggac
1560

aggtagcta actcagcctt tgtggaacgt cttcggaaac atggcttaga agtgatctat
1620

cgattgagc ccattgatga gtactgtgtc caacagctga aggaatttga ggggaagact
1680

cagtgtcag tcaccaaaga aggcttgaa cttccagagg atgaagaaga gaaaaagaag
1740

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1800

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1860

aaagcat atggctggac agcaaactg gagagaatca tgaaagctca agccctaaga
1920

caactcaa caatgggtta catggcagca aagaaacacc tggagataaa cctgaccat
1980

cattattg agaccttaag gcaaaaggca gaggctgata agaacgacaa gtctgtgaag
2040

ctctgtca tcttgcttta tgaaactgag ctctgtctt ctggcttcag tctggaagat
2100

ccagacac atgctaacag gatctacagg atgatcaaac ttggtctggg tattgatgaa
2160

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2220

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2280

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2340

tgtaata ttaaaaagtc tgtatggcat gacaactact ttaaggggaa gataagattt
2400

gtctacta agtgatgctg tgatacctta ggcactaaag cagagctagt aatgcttttt
2460

gtttcatg ttggttcttt cacagatggg gtaacgtgca ctgtaagacg tatgtaacat

eolf-seql-S000001.txt

2520

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2580

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2640

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2700

ccctctaga aatagggttaa actgaagcaa cttgatggaa ggatctctcc acagggcttg
2760

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2820

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2880

ctgcttaaa gttgtaacaa atacagatga gt
2912

?10> 16

?11> 3369

?12> DNA

?13> Homo sapiens

!00> 16

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60

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120

caatctcg gctgactgca accactgcct ccagggttca agcgattctc ttgcctcagc
180

cccaagta gctgggatta cagattgatg ttcattgtcc tggcactact acaagattca
240

ctcctgat gctactgaca acgtggcttc tccacagtca ccaaaccagg gatgctatac
300

gacttccc tactctcatc tgctccagcc ccctgacctt atagttgccc agctttcctg
360

aattgact ttgcccatca atacacagga tttagcatcc agggaagatg tcggagcctc
420

atgttaat tttctaattg agaatgttgg cgctgtccga acctggagac aggaaaacaa
480

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eolf-seql-S000001.txt

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600

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660

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720

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780

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840

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900

caaggaggc cttcagaaac ctgccaacc ttagaatctt ggacctggga agtagtaaga
960

atacttctt gcatccagat gcttttcagg gactgttcca tctgtttgaa cttagactgt
1020

tttctgtgg tctctctgat gctgtattga aagatggta tttcagaaat ttaaaggctt
1080

aactcgctt ggatctatcc aaaaatcaga ttcgtagcct ttaccttcat ccttcatttg
1140

gaagttgaa ttccttaaag tccatagatt tttcctccaa ccaaatattc cttgtatgtg
1200

acatgagct cgagccccta caagggaata cgctctcctt ttttagcctc gcagctaata
1260

cttgatag cagagtctca gtggactggg gaaaatgtat gaaccattc agaaacatgg
1320

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1380

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1440

gggttttg cttccataac atcaaagatc ctgaccagaa cacatttgct ggctggcca
1500

agttcagt gagacacctg gatctttcac atgggtttgt cttctcctg aactcacgag
1560

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1620

eolf-seql-S000001.txt

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1680

tctggggga actttacagt tcgaatttct atggactacc taaggtagcc tacattgatt
1740

gcaaaagaa tcacattgca ataattcaag accaaacatt caaattcctg gaaaaattac
1800

gaccttga tctccgagac aatgctctta caaccattca ttttattcca agcatacccg
1860

tatcttctt gagtggcaat aaactagtga ctttgccaaa gatcaacctt acagcgaacc
1920

catccactt atcagaaaac aggctagaaa atctagatat tctctacttt cttctacggg
1980

acctcatct ccagattctc attttaaatc aaaatcgctt ctctcctgt agtggagatc
2040

aacccttc agagaatccc agcttagaac agcttttcct tggagaaaat atgttgcaac
2100

tgcctggga aactgagctc tgttgggatg tttttgaggg actttctcat cttcaagttc
2160

gtatttgaa tcataactat cttaattccc ttccaccagg agtatttagc catctgactg
2220

attaagggg actaagcctc aactccaaca ggctgacagt tctttctcac aatgatttac
2280

tgctaattt agagatcctg gacatatcca ggaaccagct cctagctcct aatcctgatg
2340

atttgtatc acttagtgtc ttggatataa ctcataacaa gttcatttgt gaatgtgaac
2400

tagcacttt tatcaattgg cttaatcaca ccaatgtcac tatagctggg cctcctgcag
2460

catatattg tgtgtaccct gactcgttct ctgggggttc cctcttctct ctttccacgg
2520

aggttgatga tgaagaggaa gtcttaaagt ccctaaagtt ctcccttttc attgtatgca
2580

gtcactct gactctgttc ctcatgacca tctcacagt caciaagtgc cggggcttct
2640

tttatctg ttataagaca gccagagac tgggtgttcaa ggaccatccc cagggcacag
2700

eolf-seql-S000001.txt

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2760

gcagaatgc tttgctcaaa cacctggaca ctcaatacag tgaccaaagc agattcaacc
2820

gtgctttga agaaagagac tttgtcccag gagaaaaccg cattgccaat atccaggatg
2880

catctggaa cagtagaaag atcgtttgtc ttgtgagcag acatttcctt agagatggct
2940

gtgccttga agccttcagt tatgcccagg gcagggtgctt atctgacctt aacagtgtc
3000

catcatggg ggtgggtggg tccttgtccc agtaccagtt gatgaaacat caatccatca
3060

aggctttgt acagaaacag cagtatttga ggtggcctga ggatctccag gatggtggct
3120

gtttcttca taaactctct caacagatac taaagaaaga aaaagaaaag aagaaagaca
3180

taacattcc gttgcaaact gtagcaacca tctcctaatac aaaggagcaa tttccaactt
3240

tctcaagcc acaataaact cttcactttg tatttgcacc aagttatcat tttgggggtcc
3300

ctctggagg tttttttttt ctttttgcta ctatgaaaac aacataaatc tctcaatttt
3360

gtatcaaa
3369

210> 17

211> 2855

212> DNA

213> Homo sapiens

400> 17

agtggcagt tatatagacc ggcgggcggag cacgcgtgtg tgcggacgca gttgcgtgag
60

tggtttgtac tatcctcggg gctgtgggtgc agagctagtt cctctccagc tcagccgcgt
120

tggtttggac atatttgact cttttccccc caggttgaat tgaccaaagc aatgggtgatg
180

agaagccta gtcccctgct ggtcgggagg gaatttgtga gacagtatta cacactgctg
240

eolf-seql-S000001.txt

1accaggccc cagacatgct gcatagattt tatggaaaga actcttctta tgtccatggg
300

1gattggatt caaatggaaa gccagcagat gcagtctacg gacagaaaga aatccacagg
360

1aagtgatgt cacaaaactt caccaactgc cacaccaaga ttcgccatgt tgatgctcat
420

1ccacgctaa atgatgggtgt ggtagtccag gtgatggggc ttctctctaa caacaaccag
480

1ctttgagga gattcatgca aacgtttgtc cttgctcctg aggggtctgt tgcaaataaa
540

1tctatgttc acaatgatat cttcagatac caagatgagg tctttgggtg gtttgtcact
600

1agcctcagg aggagtctga agaagaagta gaggaacctg aagaaagaca gcaaacacct
660

1agtggttac ctgatgattc tggaactttc tatgatcagg cagttgtcag taatgacatg
720

1aagaacatt tagaggagcc tgttgctgaa ccagagcctg atcctgaacc agaaccagaa
780

1aagaacctg tatctgaaat ccaagaggaa aagcctgagc cagtattaga agaaactgcc
840

1ctgaggatg ctcagaagag ttcttctcca gcacctgcag acatagctca gacagtacag
900

1aagacttga ggacattttc ttgggcatct gtgaccagta agaatcttcc acccagtgga
960

1ctgttccag ttactgggat accacctcat gttgttaaag taccagcttc acagccccgt
1020

1cagagtcta agcctgaatc tcagattcca ccacaaagac ctcagcggga tcaaagagtg
1080

1gagaacaac gaataaatat tcctcccaa aggggaccca gaccaatccg tgaggctggt
1140

1agcaaggtg acattgaacc ccgaagaatg gtgagacacc ctgacagtca ccaactcttc
1200

1ttggcaacc tgcctcatga agtggacaaa tcagagctta aagatttctt tcaaagttat
1260

1gaaacgtgg tggagttgcg cattaacagt ggtgggaaat tacccaattt tggttttgtt
1320

1gttttgatg attctgagcc tgttcagaaa gtccttagca acaggcccat catgttcaga

eolf-seql-S000001.txt

1380

gtgaggtcc gtctgaatgt cgaagagaag aagactcgag ctgccaggga aggcgaccga
1440

gagataatc gccttcgggg acctggaggc cctcgagggt ggctgggtgg tggaatgaga
1500

gccctcccc gtggaggcat ggtgcagaaa ccaggatttg gagtgggaag ggggcttgcg
1560

cacggcagt gaatcttcat ggatcttcat gcagccatac aaaccctggt tccaacagaa
1620

ggtgaattt tcgacagcct ttggtatctt ggagtatgac cccagtctgt tataaactgc
1680

taagtttgt ataattttac tttttttgtg tggttaatgg gtgtgctccc tctccctctc
1740

tccctttcc tgacctttag tctttcactt ccaattttgt ggaatgatat tttaggaata
1800

cggactttt aaagaagcaa aaaaaagac tgaatttcct tgcttacttt gcatatacag
1860

ctggatttt tttttttttt ttacagccat ttccccaag gaatgtcttg catattactg
1920

catttggtg tgtttcattc attggaatat ttcttatttt ctacgtgttt gaaaagcctg
1980

aagaaatac aggatttgat aatattttga aggcaggaaa aacccaaatt gtttcttctt
2040

gagagtcac gactaccttc tgggtgtggag aaattgccat tggaaaattt gacaattttg
2100

ttctcactg gtatgtttta aaactgaata aaaggaatag aatttttttt tgataaagga
2160

cacaaaaca attctaaaac ctaactgttt ttaccattga aatttaaatt gtgataatag
2220

ttttaaatg tctagaatgc aactgatagg cttttcttga actgttagtt tttttgaagt
2280

gttttttca tgtttaattt gtatttgtaa aaaaacaaaa agcaaaaaaa ttcccaaaac
2340

cagataaca accagagcaa aactgttggt ctttctatct atctttgatt tcagtcttgg
2400

aattgttta aaaaaaaaaa ctagatttgg tttattaggt tcagagtatg tggggaatta
2460

eolf-seql-S000001.txt

agaatccct ctttcacac tttgtgtatg tcttttgta acatatttgt tatgccttat
2520

ctaaaattg agtctcaaac tggaaatgcct ttgaagacag atgcttctat agaggttctt
2580

gacctaaat agttcagcat ttgtattttt attctggat ctaatcagat tctaatcat
2640

gcccgtaaag aaggaatggt actttaatat tggactttgc tcatgtgctc gtgtccgcat
2700

ttttttttt cttaaaatca tagccatatg gttaaatttc tatttttgta tggttctctt
2760

tattgatgg gcatgcagtg ggtgttactt ggaaatggcc aatttttatt aaaatatttc
2820

ggaagaaaa tttaaaaaaa aaaaaaaaaa aaaaa
2855

210> 18
211> 2128
212> DNA
213> Homo sapiens

400> 18
tggaaacca ctgcaatgac attattccca gtgctgttgt tcttggttgc tgggctgctt
60

cattctttc cagcaaatga agataaggat cccgctttta ctgctttgtt aaccacccaa
120

cacaagtgc aaaggagat tgtgaataag cacaatgaac tgaggagagc agtatctccc
180

ctgccagaa acatgctgaa gatggaatgg aacaaagagg ctgcagcaaa tgcccaaaag
240

gggcaaacc agtgcaatta cagacacagt aacccaaagg atcgaatgac aagtctaaaa
300

gtggtgaga atctctacat gtcaagtgcc tccagctcat ggtcacaagc aatccaaagc
360

gttttgatg agtacaatga ttttgacttt ggtgtagggc caagactcc caacgcagtg
420

tggacatt atacacaggt tgtttggtac tcttcatacc tcgttggatg tggaaatgcc
480

actgtccca atcaaaaagt tctaaaatac tactatgttt gccaatattg tcttgctggt
540

eolf-seql-S000001.txt

attgggcta atagactata tgtcccttat gaacaaggag caccttgtgc cagttgcca
600
ataactgtg acgatggact atgcaccaat ggttgcaagt acgaagatct ctatagtaac
660
gtaaaagtt tgaagctcac attaacctgt aaacatcagt tggtcaggga cagttgcaag
720
cctcctgca attgttcaaa cagcatttat taaatacgca ttacacaccg agtagggcta
780
gtagagagg agtcagatta tctacttaga tttggcatct acttagattt aacatatact
840
gctgagaaa ttgtaggcat gtttgatata catttgattt caaatgtttt tcttctggat
900
tgcttttta ttttacaaaa atatttttca tacaaatggt taaaaagaaa caaatctat
960
acaacaact ttggattttt atatataaac tttgtgattt aaatttactg aatttaatta
1020
ggtgaaaat tttgaaagtt gtattctcat atgactaagt tcactaaaac cctggattga
1080
agtgaaaat tatgttccta gaacaaaatg tacaaaaaga acaatataat tttcacatga
1140
cccttggct gtagttgcct ttcttagctc cactctaagg ctaagcatct tcaaagacgt
1200
ctcccatat gctgtcttaa ttcttttcac tcattcaccc ttcttcccaa tcatctggct
1260
gcctcctca caattgagtt gaagctgttc ctctaaaac aatcctgact tttattttgc
1320
aaaatcaat acaatccttt gaatttttta tctgcataaa ttttacagta gaatatgatc
1380
aaccttcat ttttaaacct ctcttctctt tgacaaaact tccttaaaaa agaatacaag
1440
aatatagg taaataccct ccactcaagg aggtagaact cagtcctctc ctttgtgagt
1500
tcactaaa atcagtgact cacttccaaa gagtggagta tggaaaggga aacatagtaa
1560
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1620

eolf-seql-S000001.txt

agtgataag tcattcagat ttgttctaga taatctttct aaaaattcat aatcccaatc
1680

aattatgag ctaaaacatc cagcaaactc aagttgaagg acattctaca aaatatccct
1740

gggtatttt agagtattcc tcaaaactgt aaaaatcatg gaaaataagg gaatcctgag
1800

aacaatcac agaccacatg agactaagga gacatgtgag ccaaatacaa tgtgcttctt
1860

gatcagatc ctggaacaga aaaagatcag taatgaaaaa actgatgaag tctgaataga
1920

tctggagta tttttaacag tagtgttgat ttcttaatat tgacaaatat agcagggtaa
1980

gtaagatga taacgttaga gaaactgaaa ctgggtgagg gctatctagg aattctctgt
2040

ctatcttac caaatcttcg gtaagtctaa gaaagcaatg caaaataaaa agtgtcttga
2100

aaaaaaaa aaaaaaaaaa aaaaaaaa
2128

210> 19

211> 1428

212> DNA

213> Homo sapiens

400> 19

ttcaggatca gggagaatgt ataaatgtcc attgccatcg aggttctgct atttttgaga
60

gctgaagca actccaagga cacagttcac agaaatttgg ttctcagccc caaaatactg
120

ttgaattgg agacaattac aaggactctc tggccaaaaa cccttgaaga ggccccgtga
180

ggaggcagt gaggagcttt tgattgctga cctgtgtcgt accaccccag aatgtgcact
240

ggggctgtg ccagatgcct gggggggacc ctcatccccc ttgctttttt tggcttctctg
300

ctaacatcc tgttattttt tcctggagga aaagtgatag atgacaacga ccacctttcc
360

aagagatct ggttttttcgg aggaatatta ggaagcgggtg tcttgatgat cttccctgcg
420

eolf-seql-S000001.txt

tggtgttct tgggcctgaa gaacaatgac tgctgtgggt gctgcggcaa cgagggctgt
480

ggaagcgat ttgcgatgtt cacctccacg atatttgctg tggttggatt cttgggagct
540

gatactcgt ttatcatctc agccatttca atcaacaagg gtcctaaatg cctcatggcc
600

atagtacat ggggctaccc cttccacgac ggggattatc tcaatgatga ggccttatgg
660

acaagtgcc gagagcctct caatgtgggt ccttggaatc tgaccctctt ctccatcctg
720

tggtcgtag gaggaatcca gatggttctc tgcgccatcc agtggtcaa tggcctcctg
780

ggaccctct gtggggactg ccagtgttgt ggctgctgtg ggggagatgg acccgtttaa
840

cctccgaga tgagctgctc agactctaca gcatgacgac tacaatttct tttcataaaa
900

ttcttctct tcttggaatt attaatcct atctgcttcc tagctgataa agcttagaaa
960

ggcagttat tccttctttc caaccagctt tgctcgagtt agaattttgt tattttcaaa
1020

aaaaaatag tttggccact taacaaattt gatttataaa tctttcaaatt tagttccttt
1080

tagaattta ccaacagggt caaagcatac ttttcatgat ttttttatta caaatgtaaa
1140

tgtataaag tcacatgtac tgccatacta cttctttgta tataaagatg tttatatctt
1200

ggaagtttt acataaatca aaggaagaaa gcacatttaa aatgagaaac taagaccaat
1260

tctgttttt aagaggaaaa agaattgattg atgtatccta agtattgtta tttgttgtct
1320

tttttgctg ccttgcttga gttgcttggt actgatcttt tgaggctgtc atcatggcta
1380

ggttctttt atgtatgtta aattaaaacc tgaattcaga ggtaacgt
1428

210> 20
211> 2948
212> DNA

eolf-seql-S000001.txt

:213> Homo sapiens

:400> 20

ggtaatgat taatctgtca ggcacaaaag ggattgtttt ggggatttcg ggttctaagt
60gcagattca aacaaatagc agcgaacagg gaatgacagt tccaccagaa gacgattaag
120cacagcctc taattggaac ggcatttgta cagtcagaga ctcttaccag acatctccag
180aatctgtga gccattgtca aaacgtccat tttcatctgg ctgtgaaagt gaggaccaca
240caggtaggt attggtagaa acaggagtc tccagagaagc cccaagatgc agcctgaggg
300gcagaaaag ggaaaaagct tcaagcagag actggtcttg aagagcagct tagcgaaaga
360accctctct gagttcttgg gcacgttcat cttgattgtc cttggatgtg gctgtgttgc
420caagctatt ctgagtcgag gacgttttgg aggggtcatc actatcaatg ttggattttc
480atggcagtt gcaatggcca tttatgtggc tggcgggtgc tctggtgggc acatcaacc
540gctgtgtct ttagcaatgt gtctctttgg acggatgaaa tgggtcaaatt tgccatttta
600gtgggagcc cagttcttgg gagcctttgt gggggctgca accgtctttg gcatttacta
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720cacattttt gcaacatacc cagctccgta tctatctctg gcgaacgcat ttgcagatca
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840ggagccccc agaggcctag agcccattgc catcggcctc ctgattattg tcattgcttc
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960:tcactgcc ttggcaggct gggggtttga agtcttcaga gctggaaaca acttctggtg
1020

attcctgta gtgggccctt tgggtgggtgc tgtcattgga ggctcatct atgttcttgc

eolf-seql-S000001.txt

1080

attgaaatc caccatccag agcctgactc agtctttaag gcagaacaat ctgaggacaa
1140

ccagagaaa tatgaactca gtgtcatcat gtagtggcat gctcagctct ggatttgag
1200

cagtttggg attctcttca gaaagatggc atctaagtgt ctgtgttctt gtaagcctga
1260

gtggaatcc acccagtttt gtctgctagc catatgggac atctaattgg aaaagcatct
1320

cataaaagt ttggaaacaa tgaccacttc tctaccattg tccccaccc cccccccag
1380

ataacgctg actgtcccct gaaacagcct tctctcctgc cctgtttatt tcctcctga
1440

gggaattct tgctaggtaa gcactaataa ctcgcatct tgacgatagt cccatttggg
1500

ggtttcagc tgcactatct gtatgaaatg gtgtcaccaa aacccttttc ttcagtatcg
1560

caaagatta cattctgagt accaaccaaa ccctaaattg aaagacaaaa ctatggtttc
1620

gtcaacata ttcattgaatt agggagctaa tgggttaagc ttccagttcc cgctatgcta
1680

tggatttgt ataaatactg atattctcca aacctagtgg tgtagggagc aagagaatgc
1740

gctggaagg cacaagggga ggacattgtg gcattcagaa actgcaggag acaagatgaa
1800

ttgagaagc caaatggaat ttttaatgga aaccatttat cagattaatc tcttgctctc
1860

tgcatttta gaggacacca attaatctcc tggctcttag tatataataa cctaaaatac
1920

attgtaacc tcagtcatga aaaatacatc actctgtctt tttagctcaa atgtattttc
1980

taattgccc acttgagaac agacatttga caagttatat caacgactgt gcttgtccat
2040

attttacac atgccctaga agccaaaact gaaagccact ggatcctggg ctagctgaat
2100

tcagagtg ggaggtctcc aaaaagatat taccttattg ggcttaacaa ttcacaaggc
2160

eolf-seql-S000001.txt

ctttcacac ccattatcta atttaatcct cataatgact atgtgaggca aatgccacat
2220

gcccatTTT tcagataaag aaacaaaatc ttagggaaga taagttgagt tgtccaagag
2280

acactgaaa gttgaatggt atctaatagca ttctcttacc tttcagaaga tcagtagctg
2340

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2400

atgtacacc tctggacaaa atgttctca atcttaagat acaaagaccc tcattgtctg
2460

gtctattcc cacacttact gactacagat gaaggaaagt ggtagcaatt taatcataac
2520

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2580

aagtcttga tcttgcttcc tgccagcacc aaacattaca ttCaggggat ttctctggc
2640

cagtctttt ccccttgaag ttctctaata gatgttactt ttgacaaaag atcgctatg
2700

gttacaagc accaggggat gctctacatc aagggatgca ctttcagtca aactgtcaaa
2760

agcccagaa ttcccaaagg cattaggttt cccaactgct ttgtgctgat atcagaacag
2820

agaaattaa atgtgaaatg tttctgatga cttatgttct acaatctatg gacatacggg
2880

ttttttttt ctTgcttTga agctacctgg atatttctta ttTgaaataa aattgttcgg
2940

cattggtt
2948

?10> 21

?11> 2270

?12> DNA

?13> Homo sapiens

100> 21

cacggagac ctgcgaggct cccggaactg tcgcccttcc aggatgtggc tcctgctct
60

ttcttgcc actctcgctg cttccgcggc ttgggcagtg catccgtcct cgccacctgt
120

eolf-seql-S000001.txt

igtggacacc gtgcatggca aagtgttggg gaagttcatc agcttagaag gatttgcaca
180

rcctgtggcc gttttcctgg gaatcccttt tgccaagccc cctcttggac ccctgaggtt
240

.actccaccg cagcctgcag agccgtggag ctttgtgaag aatgccacct tgtaccctcc
300

.atgttcacc caagatccaa ggcggggggg gcagttaatc tcagagctat ttacaaaccg
360

.aaagagaac attcctctca agctttctga agactgtctt tacctcaata ttacactcc
420

gctgacttg accaagaaaa acaggctgcc ggtgatggtg tggatccacg gaggggggct
480

.atggtgggt gcggcatcaa cctatgatgg gctggccctt gctgcccacg aaaacgtggt
540

gtggtgacc attcaatatc gcctgggcat ctggggattc ttcagcacag gggatgaaca
600

agcccgggg aactgggggc acctggacca gctggctgcc ctgcactggg tccaggacaa
660

attgccagc tttggaggga acccaggctc tgtgaccatc tttggagggt cagcgggagg
720

gaaagtgtc tctgttcttg ttttgtctcc attggccaag aacctcttcc accgggccat
780

tctgagagt ggcggtggcc tcacttctgt tctggtgaag aaaggtgatg tcaagccctt
840

gctgaggta ggtctccggc tggtacgtct ctggctggac acccacacct ccttggctct
900

tgctctga atcctcaggg atctctcttg tggttggttg tagctaattg tctcctagaa
960

cactgaggc accaatggct gagcaggaag ggcgaggaga caccttgatc agcgtcccag
1020

ttcacagcc aggcaaaccg acacagggtc tggaagggat ttgccaaggg cagcaggtga
1080

ccgggcaga gctgggactc cagctcatgg ccctagcagc cagtacagtg ccctgtctgt
1140

accacactc cacctatgtg ccagggcctg gtgccatgtt gggcagtgat ggtgtcttgt
1200

eolf-seql-S000001.txt

ttctctcagg gtctgagttc tgtggaccca cttgtgggct gtgggcctga agcagttcca
1260

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1320

acacaacaa aactaggtga ctaagtgaag gcaaaaacaa gaaatgggca gacgtcatcc
1380

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1440

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1560

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1620

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1680

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1800

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1860

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1920

gaggatcgc cactggagc cagtggcatg gaggatttcg gtagatttga aagcttgttt
1980

gggaaagca tccaaattta aagggccggt acataggagg agagaaaatg gggatgccaa
2040

aatTTTTtag aatTTTTgag aatTTTTtaa gaattcattg gttataagca acagttgccc
2100

ttgaccaga cttaatgcaa gaaggagcat tagcctggtg tgggtggctca tgcctgtaat
2160

cctgcaatt tgggagacca aatgagaagg attgcttgag cccaggagtt tgagaccagc
2220

agggcaaca aagtgatacc ctgtctctac aaaaaaaaaa aaaaaaaaaa
2270

eolf-seql-S000001.txt

:210> 22
:211> 674
:212> DNA
:213> Homo sapiens

:400> 22
:cccttggtt ccgcccgcgc gtcacgtgac cccagcgcct acttgggctg aggagccgcc
60
icgtcccctc gccgagtccc ctcgccagat tccctccgtc gccgccaaga tgatgtgcgg
120
icgcacctcc gccacgcagc cggccaccgc cgagaccag cacatcgccg accaggtgag
180
itcccagctt gaagagaaag aaaacaagaa gttccctgtg ttttaaggccg tgtcattcaa
240
iagccaggtg gtcgcgggga caaactactt catcaaggtg cacgtcggcg acgaggactt
300
gtacacctg cgagtgttcc aatctctccc tcatgaaaac aagcccttga ccttatctaa
360
taccagacc aacaaagcca agcatgatga gctgacctat ttctgatact gactttggac
420
aggcccttc agccagaaga ctgacaaagt catcctccgt ctaccagagc gtgcacttgt
480
atcctaaaa taagcttcat ctccgggctg tgccccttgg ggtggaaggg gcaggattct
540
cagctgctt ttgcatttct cttcctaaat ttcattgtgt tgatttcttt ccttcccaat
600
ggtgatctt aattactttc agaatatattt caaaatagat atatttttaa aatccttaaa
660
aaaaaaaaaaaa
674

210> 23
211> 3189
212> DNA
213> Homo sapiens

400> 23
gcgtgagcg gcgaaagccg ggagggcgag cgagagagca agcaggcagc aggctgccgg
60
gggcgggag gacggcacag agggagggag cgagcgagca gtgagtaagc cagcaagggc
120

eolf-seql-S000001.txt

gtcgggtcc cgaggtcagc cgagatttct cagggtccctc cggccccctc cctggagttcc
180

cagcgcctc cgggtgtccag aggatcggac acggcccggc ccggccatgg cctcgttget
240

aaggtggat caggaagtga agctcaagg tgaattcttc agggagcggg tcacaagtga
300

gcagaagac ttggtggcaa attttttccc aaagaagtta ttagaacttg atagttttct
360

aaggaacca atcttaaaca tccatgacct aactcagatc cactctgaca tgaatctccc
420

gtccctgac cccattcttc tcaccaatag ccatgatgga ctggatgggc ccacttataa
480

aagcgaagg ttggatgagt gtgaagaagc cttccaagga accaagggtgt ttgtgatgcc
540

aatgggatg ctgaaaagca accagcagct ggtggacatt attgagaaag tgaaacctga
600

atccggctg ttgattgaga aatgtaacac ggtcaaaatg tgggtacagc tcctgattcc
660

aggatagaa gatggaaaca actttggggg gtccattcag gaggaacag ttgcagagct
720

agaactggt gagagtgaag ctgcatctta tctggaccag atttctagat attatattac
780

agagccaaa ttggtttcta aaatagctaa atatcccat gtggaggact atcgccgcac
840

gtgacagag attgatgaga aagaatatat cagccttcgg ctcatcatat cagagctgag
900

aatcaatat gtcactctac atgacatgat cctgaaaaat atcgagaaga tcaaacggcc
960

cggagcagc aatgcagaga ctctgtactg aggccagggc cagggccagg ggactctgtg
1020

gtctggctc aagaccgaca ttgccttggg ttgttacatg actatcgtga tggggaaact
1080

gttggaat agtaatcaca cctctctgtt tttagttaga gtctaataa actctcatct
1140

gttctgtga tgtgtttacc tcttttttca ggcctcagga actcttctat ttccttccct
1200

atacccac acccaacctg tcgtaatttc tggagaactc caggtttgtg tgtgcaggat

eolf-seql-S000001.txt

1260

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1320

tatgttttc ttccgtttga taattagttg gttaaaagct gagggaaccg gaaggaaagt
1380

ctaggtggt ttttaggaac taggggtggcg gggggacgaa cttctcttcc tcacatgagg
1440

tactgtttc tttcctctgt ggggcattgg atcctccac agttgccctg gtgatgactt
1500

gggcttccc atctgtgtac atcccacttt gaatcttgat cgtgacaaga aataccttag
1560

ccttcagtc aattccgaag ctcttcagtc tgtttttata atgggcgttt tcacatgcac
1620

tatgtgtat gcatgtatac gcccatacag acatgcacac acagactcct actccattag
1680

taacatacc ctccctctcc acaaccctg tcacatacct ttcaggaggt gacagttgtc
1740

tagttgtca tctaccaga caaacgtcct gggcccgctc tccctcctga tactgtagcc
1800

cttgggtacc caggggtgagt tgggtggagaa cagagagatg agaagcagag ggcttgggga
1860

agcctgttc ctctctgact cagccctttt tggcattatt gcaagagctt gactcctggt
1920

gccttttcc cagccagttt tcagttgggg tgaaggtttc tgcaagtgtg aggtccagat
1980

ctgctgtc atgttgggt ttccttttgg gaactatttc tctttattta tagtgtcggg
2040

ttccgggga aagcaatcat tgggtgtgtat gtgtatgtgc atgcacacac gtgcatatac
2100

catttgtgt atgtggaaat gtgctgggca agtcaaaact atagaagagt tgcctcctgt
2160

ctcgaatc ttccagagat atcacttaat tgtaacagc ttttgtgtta atccccttca
2220

ccctagct cttttattct accacggctg gagagttgat acctgcagtc agcctgccag
2280

tactcttag tgtctgttct tgacttattt ttctgtctc tgtcttccaa cccccaataa
2340

eolf-seql-S000001.txt

atttccacc ggggatgcat catttttact cccaatattc tgtagagagg gagtcaggat
2400

ctgtcttcc cacgaatagt actcagtaac aaaccaattg catttttagtt gggcagtgc
2460

ccaccacc ctccagatcc ctccagcta aaacccttcc cccttcctc catgtgtttc
2520

cagtttccc gtttcgtttg ttggactgtt ccactgcccc tctcctcac cctatcacc
2580

tggatcgta atgtaaaatt cttttaccat gtcaagaaat tattaataat acaggtactt
2640

gacctcttt ctaaagccgc agaccctggg gcaatgctct ggtggctagg gatgtactca
2700

gctcatatg tgtgcacgct tggacacca cctccatgga cacctagcca ccctgttgtg
2760

gtccttatg ccagttgagc tgaatctttt cccagtata gtggaaagac tgaggcttct
2820

cctactgag caaggttggg tgcttcattt gtgttcagtc tgaattatgg gaaagttagc
2880

cttcccaga cctaagctgc cttctctccc tactttcaga agatcctagt tcttccttc
2940

cgagtgata cccatgaact gccagtagag gctgctatcg ttccatgtgt aaggaatgaa
3000

tggttcaag gcgcgtccta cccagtcatt ttctttacct tatactaatt cttcctgaat
3060

atgtcttca gtttcttgag gagactccta gttttggttt tcaaattact tggagggctg
3120

ctaggaatc tatctcctc tgaaataaag tttcctcatc ttccaccttg caaaaaaaaa
3180

aaaaaaaa
3189

?10> 24

?11> 3338

?12> DNA

?13> Homo sapiens

!00> 24

>cagcccgg ccccgccgcc ccggtgcgc acgcgacgcc ccctccaggc cccgctcctg
60

eolf-seql-S000001.txt

:gccctatatt ggtcattcgg ggggcaagcg gcgggagggg aaacgtgcgc ggccgaaggg
120

aaagcggagc cggcgccggc tgcgagagg agccgctctc gccgccgcca cctcggtgg
180

agcccaacga ggctgccgca tctgccctc ggaacaatgg gactcggcgc gcgaggtgct
240

gggcgcgc tgctcctggg gacgctgcag gtgctagcgc tgctgggggc cgcccatgaa
300

gcgcagcca tggcggagac tctccaacat gtgccttctg accatacaaa tgaaacttcc
360

acagtactg tgaaaccacc aacttcagtt gcctcagact ccagtaatac aacggtcacc
420

ccatgaaac ctacagcggc atctaataca acaacaccag ggatggctctc aacaaatatg
480

cttctacca ccttaaagtc tacacccaaa acaacaagtg tttcacagaa cacatctcag
540

tatcaacat ccacaatgac cgtaaccac aatagttcag tgacatctgc tgcttcatca
600

taacaatca caacaactat gcattctgaa gcaaagaaag gatcaaaatt tgatactggg
660

gctttgttg gtggtattgt attaacgctg ggagttttat ctattcttta cattggatgc
720

aatgtatt actcaagaag aggcattcgg tatcgaaacca tagatgaaca tgatgccatc
780

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840

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900

catataatg tacagtgtat tacgtaaata tgtaaagatt cttcaaggta acaagggttt
960

ggttttgaa ataaacatct ggatcttata gaccgttcat acaatgggtt tagcaagttc
1020

tagtaagac aaacaagtcc tatctttttt tttttggctg ggggtgggggc attggtcaca
1080

atgaccagt aattgaaaga cgtcatcact gaaagacaga atgccatctg ggcatacaaa
1140

eolf-seql-S000001.txt

aagaagttt gtcacagcac tcaggatttt gggatatctt tgtagctcac ataaagaact
1200

cagtgcctt tcagagctgg atatatctta attactaatg ccacacagaa attatacaat
1260

aaactagat ctgaagcata atttaagaaa aacatcaaca ttttttgtgc tttaaactgt
1320

gtagttggt ctagaaacaa aatactccaa gaaaaagaaa attttcaaataaaaacccaaa
1380

taatagctt tgcttagccc tgttagggat ccattggagc attaaggagc acatatcttt
1440

ttaacttct tttgagcttt caatgttgat gtaatttttg ttctctgtgt aatttaggta
1500

actgcagtg tttaacataa taatgtttta aagacttagt tgtcagtatt aaataatcct
1560

gcattatag ggaaaaaacc tcctagaagt tagattattt gctactgtga gaatattgtc
1620

ccactggaa gttacttttag ttcatttaata tttaatttta tattttgtga atattttaag
1680

actgtagag ctgctttcaa tatctagaaa tttttaattg agtgtaaaca cacctaactt
1740

aagaaaaag aaccgcttgt atgattttca aaagaacatt tagaattcta tagagtcaaa
1800

ctatagcgt aatgctgtgt ttattaagcc agggattgtg ggacttcccc caggcaacta
1860

acctgcagg atgaaaatgc tatattttct ttcatgcact gtcgatatta ctgagatttg
1920

ggaaatgac atttttatataaaaacaaac accaaaatat tttagaataa attcttagaa
1980

gttttgaga ggaattttta gagaggacat ttctctcttc ctgatttgga tattccctca
2040

atccctcct cttactccat gctgaaggag aagtactctc agatgcatta tgттаатgga
2100

agaaaaagc acagtattgt agagacacca atattagcta atgtattttg gagtgttttc
2160

attttacag ttttatattcc agcactcaaa actcaggggc aagttttaac aaaagaggta
2220

jtagtcaca gtaaatacta agatggcatt tctatctcag agggccaaag tgaatcacac

eolf-seql-S000001.txt

2280

agtttctga aggtcctaaa aatagctcag atgtcctaata gaacatgcac ctacatttaa
2340

aggagtaca ataaaactgt tgtcagcttt tgttttacag agaacgctag atattaagaa
2400

tttgaaatg gatcatttct acttgctgtg cattttaacc aataatctga tgaatataga
2460

aaaaatgat ccaaaatatg gatatgattg gatgtatgta acacatacat ggagtatgga
2520

gaaattttc tgaaaaatac atttagatta gtttagtttg aaggagaggt gggctgatgg
2580

tgagttgta tgttactaac ttggccctga ctggttgtgc aaccattgct tcatttcttt
2640

caaatgta gttaagatat actttattct aatgaaggcc ttttaaattt gtccactgca
2700

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2760

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3000

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3060

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3120

taaaatttc cttgaataat ccatgaaagg aataattcaa atacagataa acagagttgg
3180

agtatatta tagtgataat tttgtatttt caamaaaaaa aaagttaaac tcttcttttc
3240

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3300

attgttctc cttctaataa aaaaaaaaaa aaaaaaaaaa
3338

eolf-seql-S000001.txt

210> 25
211> 7941
212> DNA
213> Homo sapiens

400> 25
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60
aaaaaaaaac atttccttcg ctccccctcc ctctccactc tgagaagcag aggagccgca
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ggcgagggg ccgcagaccg tctggaaatg cgaatcctaa agcgtttcct cgcttgcat
180
agtcctct gtgtttgccg cctggattgg gctaattgat actacagaca acagagaaaa
240
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300
aatatccaa catgtaatag cccaaaacaa tctcctatca atattgatga agatcttaca
360
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420
acacattca ttcataacac tgggaaaaca gtggaaatta atctcactaa tgactaccgt
480
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540
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600
agatgcaaa tctactgctt tgatgcggac cgattttcaa gttttgagga agcagtcaaa
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720
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780
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840
atggctcat tgacatctcc tccctgcaca gacacagttg actggattgt ttttaaagat
900
agtttagca tctctgaaag ccagttggct gttttttgtg aagttcttac aatgcaacaa
960

eolf-seql-S000001.txt

ctggttatg tcatgctgat ggactactta caaaacaatt ttcgagagca acagtacaag
1020

tctctagac aggtgttttc ctcatacact ggaaaggaag agattcatga agcagtttgt
1080

gttcagaac cagaaaatgt tcaggctgac ccagagaatt ataccagcct tcttgttaca
1140

gggaaagac ctcgagtcgt ttatgatacc atgattgaga agtttgcagt tttgtaccag
1200

agttggatg gagaggacca aaccaagcat gaatttttga cagatggcta tcaagacttg
1260

gtgctattc tcaataatth gctacccaat atgagttatg ttcttcagat agtagccata
1320

gcactaatg gcttatatgg aaaatacagc gaccaactga ttgtcgacat gcctactgat
1380

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1440

aagaggga aagacattga agaaggcgct attgtgaatc ctggtagaga cagtgtctaca
1500

accaaata ggaanaagga accccagatt tctaccacaa cacactacaa tcgcataggg
1560

cgaaatata atgaagccaa gactaaccga tccccacaa gaggaagtga attctctgga
1620

agggtgatg ttcccaatac atctttaaat tccacttccc aaccagtcac taaattagcc
1680

cagaaaaag atatttcctt gacttctcag actgtgactg aactgccacc tcacactgtg
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1800

acttgatgg ggactgcaga atccttaaata acagtttcta taacagaata tgaggaggag
1860

gtttattga ccagtttcaa gcttgatact ggagctgaag attcttcagg ctccagttcc
1920

caacttctg ctatcccatt catctctgag aacatatccc aagggtatat attttctctc
1980

aaaaccag agacaataac atatgatgtc cttataccag aatctgctag aaatgcttcc
2040

eolf-seql-S000001.txt

aagattcaa cttcatcagg ttcagaagaa tcactaaagg atccttctat ggagggaaat
2100
tggtggtttc ctagctctac agacataaca gcacagcccg atgttggatc aggcagagag
2160
gctttctcc agactaatta cactgagata cgtgttgatg aatctgagaa gacaaccaag
2220
ccttttctg caggcccagt gatgtcacag ggtccctcag ttacagatct ggaaatgcca
2280
attattcta cctttgccta ctcccaact gaggtaacac ctcatgcttt taccatcc
2340
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2400
tatacaatg gtgagacacc tcttcaacct tctacagta gtgaagtctt tctctagtc
2460
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2520
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2580
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2640
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2700
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2760
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2820
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2880
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2940
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3000
attctgtgg gtgtaactta tcagggttcc ttatttagcg gccctagcca tataccaata
3060
ctaagtctt cgttaataac cccaactgca tcattactgc agcctactca tgcctctct
3120
gtgatgggg aatgggtctgg agcctcttct gatagtgaat ttcttttacc tgacacagat

eolf-seql-S000001.txt

3180

ggctgacag cccttaacat ttcttcacct gtttctgtag ctgaatttac atatacaaca
3240

ctgtgtttg gtgatgataa taaggcgctt tctaaaagtg aaataatata tggaaatgag
3300

ctgaactgc aaattccttc tttcaatgag atggtttacc cttctgaaag cacagtcag
3360

ccaacatgt atgataatgt aaataagttg aatgcgtctt tacaagaaac ctctgtttcc
3420

tttctagca ccaagggcat gtttccaggg tcccttgctc ataccaccac taagggtttt
3480

atcatgaga ttagtcaagt tccagaaaat aacttttcag ttcaacctac acatactgtc
3540

ctcaagcat ctggtgacac ttcgcttaaa cctgtgctta gtgcaaactc agagccagca
3600

cctctgacc ctgcttctag tgaaatgtta tctccttcaa ctgagctctt attttatgag
3660

cctcagctt cttttagtag tgaagtattg ctacaacctt cctttcaggc ttctgatggt
3720

acaccttgc ttaaaactgt tcttccagct gtgcccagtg atccaatatt ggttgaaacc
3780

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3840

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3900

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3960

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4020

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4080

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4140

attccgatg aaattttaac ctccaccaa agttctgtta ctggttaagg atttgctggt
4200

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4260

eolf-seql-S000001.txt

ggcatgttg ccattacagc tgtttctccc cacagagatg gttctgtaac ctcaacaaag
4320

tgctgtttc cttctaaggc aacttctgag ctgagtcata gtgccaaatc tgatgccggt
4380

tagtgggtg gtgggtgaaga tggtgacact gatgatgatg gtgatgatga tgatgacaga
4440

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4500

aaaaggtaa tgaatgattc agacacccac gaaaacagtc ttatggatca gaataatcca
4560

tctcatact cactatctga gaattctgaa gaagataata gagtcacaag tgtatcctca
4620

acagtcaaa ctggtatgga cagaagtcct ggtaaatacac catcagcaaa tgggctatcc
4680

aaaagcaca atgatggaaa agaggaaaat gacattcaga ctggtagtgc tctgcttcct
4740

tcagccctg aatctaaagc atgggcagtt ctgacaagtg atgaagaaag tggatcaggg
4800

aaggtaacct cagatagcct taatgagaat gagacttcca cagatttcag ttttgagac
4860

ctaatgaaa aagatgctga tgggatcctg gcagcaggtg actcagaaat aactcctgga
4920

tcccacagt ccccaacatc atctgttact agcgagaact cagaagtgtt ccacgtttca
4980

aggcagagg ccagtaatag tagccatgag tctcgtattg gtctagctga ggggttgga
5040

ccgagaaga aggcagttat accccttggtg atcgtgtcag cctgacttt tatctgtcta
5100

tggttcttg tgggtattct catctactgg aggaaatgct tccagactgc acacttttac
5160

tagaggaca gtacatcccc tagagttata tccacacctc caacacctat ctttccaatt
5220

cagatgatg tcggagcaat tccaataaag cactttccaa agcatgttgc agatttacat
5280

caagtagtg ggtttactga agaatttgag acactgaaag agttttacca ggaagtgcag
5340

eolf-seql-S000001.txt

igctgtactg ttgacttagg tattacagca gacagctcca accacccaga caacaagcac
5400

agaatcgat acataaatat cgttgcctat gatcatagca gggttaagct agcacagctt
5460

ictgaaaagg atggcaaact gactgattat atcaatgcca attatgttga tggctacaac
5520

gaccaaaaag cttatatattgc tgcccaaggc ccaactgaaat ccacagctga agatttctgg
5580

gaatgatat gggaacataa tgtggaagtt attgtcatga taacaaacct cgtggagaaa
5640

gaaggagaa aatgtgatca gtactggcct gccgatggga gtgaggagta cgggaacttt
5700

tggtcactc agaagagtgt gcaagtgctt gcctattata ctgtgaggaa ttttactcta
5760

gaaacacaa aaataaaaaa gggctcccag aaaggaagac ccagtggacg tgtggtcaca
5820

agtatcact acacgcagtg gcctgacatg ggagtaccag agtactccct gccagtgctg
5880

cctttgtga gaaaggcagc ctatgccaaag cgccatgcag tggggcctgt tgtcgtccac
5940

gcagtgctg gagttggaag aacaggcaca tatattgtgc tagacagtat gttgcagcag
6000

ttcaacacg aaggaactgt caacatattt ggcttcttaa aacacatccg ttcacaaaga
6060

attatttgg taaaaactga ggagcaatat gtcttcattc atgatacact ggttgaggcc
6120

tacttagta aagaaactga ggtgctggac agtcatattc atgcctatgt taatgcactc
6180

tcattcctg gaccagcagg caaaacaaag ctagagaaac aattccagct cctgagccag
6240

caaataatac agcagagtga ctattctgca gccctaaagc aatgcaacag ggaaaagaat
6300

gaacttctt ctatcatccc tgtggaaaga tcaagggttg gcatttcac cctgagtggg
6360

aaggcacag actacatcaa tgctctctat atcatgggct attaccagag caatgaattc
6420

tcattaccc agcacctct ccttcatacc atcaaggatt tctggaggat gatatgggac

eolf-seql-S000001.txt

6480

ataatgccc aactggtggt tatgattcct gatggccaaa acatggcaga agatgaattt
6540

tttactggc caaataaaga tgagcctata aattgtgaga gctttaaggt cactcttatg
6600

ctgaagaac acaaagtgtct atctaatagag gaaaaactta taattcagga ctttatctta
6660

agctacac aggatgatta tgtacttgaa gtgaggcact ttcagtgtcc taaatggcca
6720

atccagata gcccattag taaaactttt gaacttataa gtgttataaa agaagaagct
6780

ccaataggg atgggcctat gattgttcat gatgagcatg gaggagtgc ggcaggaact
6840

tctgtgctc tgacaaccct tatgcaccaa ctgaaaaag aaaattccgt ggatgtttac
6900

aggtagcca agatgatcaa tctgatgagg ccaggagtct ttgctgacat tgagcagtat
6960

agtttctct acaaagtgat cctcagcctt gtgagcacia ggcaggaaga gaatccatcc
7020

cctctctgg acagtaatgg tgcagcattg cctgatggaa atatagctga gagcttagag
7080

ctttagttt aacacagaaa ggggtggggg gactcacatc tgagcattgt tttcctcttc
7140

taaaattag gcaggaaaat cagtctagtt ctgttatctg ttgatttccc atcacctgac
7200

gtaactttc atgacatagg attctgccgc caaatttata tcattaacaa tgtgtgcctt
7260

ttgcaagac ttgtaattta cttattatgt ttgaactaaa atgattgaat tttacagtat
7320

tctaagaat ggaattgtgg tatttttttc tgtattgatt ttaacagaaa atttcaattt
7380

tagaggtta ggaattccaa actacagaaa atgtttgttt ttagtgtcaa attttttagct
7440

tatttgtag caattatcag gtttgctaga aatataactt ttaatacagt agcctgtaaa
7500

aaaacactc ttccatatga tattcaacat ttacaactg cagtattcac ctaaagtaga
7560

eolf-seql-S000001.txt

ataatctgt tacttattgt aaatactgcc ctagtgtctc catggaccaa atttatattt
7620

taattgtag atttttatat ttactactg agtcaagttt tctagttctg tgtaattggt
7680

agtttaatg acgtagttca ttagctgggc ttactctacc agttttctga cattgtattg
7740

gttacctaa gtcattaact ttgtttcagc atgtaatttt aacttttggtg gaaaatagaa
7800

taccttcat ttgaaagaa gtttttatga gaataacacc ttaccaaaca ttgttcaaatt
7860

gtttttatc caaggaattg caaaaataaa tataaatatt gccattaaaa aaaaaaaaaa
7920

aaaaaaaaa aaaaaaaaaa a
7941

210> 26
211> 1530
212> DNA
213> Homo sapiens

400> 26
cgcagaact gccacgtggg gatgagattt gctgggctgg tagcggcggc tgctgcggga
60

gtcccgccc acgtgaagcc agcctaactg agctctggac ttgggggaca gctgtcagtg
120

cctaggccg caggacacca tgaagcaact gccagtcttg gaacctggag acaagcccag
180

aaagcaaca tggtaacact tgactgtccc tggagacagc ccctgtgctc gagttggcca
240

agctgttca tatttaccac cagttggtaa tgccaagaga gggaaggtct tcattgttgg
300

ggagcaaat ccaaacagaa gcttctcaga cgtgcacacc atggatctgg gaaaacacca
360

tgggactta gatacctgca agggcctctt gcccgggtat gaacatgcta gcttcattcc
420

tcctgcaca cctgaccgta tctgggtatt tggaggtgcc aaccaatcag gaaatcgaaa
480

tgcttaciaa gtctgaatc ctgaaaccag gacgtggacc acgccagaag tgaccagccc
540

eolf-seql-S000001.txt

:ccaccatcc ccaagaacat tccacacatc atcggcagcc attggaaacc agctatatgt
600

:tttgggggc ggagagagag gtgcccagcc cgtgcaggac acgaagctgc atgtgtttga
660

:gcaaacact ctgacctggt cacagccaga gacacttgga aatcctccat ctccccggca
720

:ggtcatgtg atggtggcag cagggacaaa gctcttcac caccgaggct tggcggggga
780

:agattctat gatgacctcc actgcattga tataagtac atgaaatggc agaagctaaa
840

:cccactggg gctgctccag caggctgtgc tgcccactca gctgtggcca tgggaaaaca
900

gtgtacatc tttggtggaa tgactcctgc aggagcactg gacacaatgt accagtatca
960

:acagaagag cagcattgga ccttgcttaa atttgatact cttctacccc ctggacgatt
1020

:gaccattcc atgtgtatca ttccatggcc agtgacgtgt gcttctgaga aagaagattc
1080

aactctctc actctgaacc atgaagctga gaaagaggat tcagctgaca aagtaatgag
1140

cacagtggg gactcacatg aggaaagcca gactgctaca ctgctctggt tgggtgtttg
1200

gggatgaat acagaagggg aaatctatga cgattgtatt gtgactgtag tggactaata
1260

aaccacat ttttattacc tgtcagttac tttcagaata gttaagtaaa acattagctg
1320

tttatacct ccaaaatata ttctgcatta tataatctgt tttctcctac tttggtaggt
1380

aagaaacta atgcaaataa ttcttatgtg cactaaacct tgctatatatt cctctcaaaa
1440

aaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa
1500

aaaaaaaaa aaaaaaaaaa aaaaaaaaaa
1530

210> 27
211> 2314

eolf-seql-S000001.txt

:212> DNA

:213> Homo sapiens

:400> 27

:gcgcgcaca gagcgagctc ttgcagcctc cccgcccctc ccgcaacgct cgaccccagg
60.ttcccccg ctcgcctgcc cgccatggcc gacaaggaag cagccttcga cgacgcagtg
120.aagaacgag tgatcaacga ggaatacaaa atatggaaaa agaacacccc ttttctttat
180.atttggtga tgacccatgc tctggagtgg cccagcctaa ctgcccagtg gcttccagat
240.taaccagac cagaagggaa agatttcagc attcatcgac ttgtcctggg gacacacaca
300.cggatgaac aaaaccatct tgttatagcc agtgtgcagc tccctaataga tgatgctcag
360.ttgatgcgt cacactacga cagtgcagaaa ggagaatttg gaggttttgg ttcagttagt
420.gaaaaattg aaatagaaat caagatcaac catgaaggag aagtaaacag ggcccgttat
480.tgccccaga acccttgtat catcgcaaca aagactcctt ccagtgatgt tcttgtcttt
540.actatacaa aacatccttc taaaccagat ctttctggag agtgcaaccc agacttgcgt
600.tccgtggac atcagaagga aggctatggg ctttcttggg acccaaactc cagtgggcac
660.tacttagtg cttcagatga ccataccatc tgccctgtggg acatcagtgc cgttccaaag
720.agggaaaag tggtagatgc gaagaccatc tttacagggc atacggcagt agtagaagat
780.tttcctggc atctactcca tgagtctctg tttgggtcag ttgctgatga tcagaaactt
840.tgatttggg atactcgttc aaacaatact tccaaaccaa gccactcagt tgatgctcac
900.ctgctgaag tgaactgcct ttctttcaat ctttatagt agttcattct tgccacagga
960.cagctgaca agactgttgc cttgtgggat ctgagaaatc tgaaacttaa gttgcattcc
1020

eolf-seql-S000001.txt

ctgagtcac ataaggatga aatattccag gttcagtggt cacctcacia tgagactatt
1080

agcttcca gtggtactga tcgcagactg aatgtctggg atttaagtaa aattggagag
1140

aacaatccc cagaagatgc agaagacggg ccaccagagt tgttgtttat tcatggtggg
1200

atactgcca agatatctga tttctcctgg aatcccaatg aaccttgggt gatttgttct
1260

atcagaag acaatatcat gcaagtgtgg caaatggcag agaacattta taatgatgaa
1320

accctgaag gaagcgtgga tccagaagga caagggtcct agatatgtct ttacttggtg
1380

gattttaga ctcccccttt tttctctcaa ccctgagagt gatttaacac tggttttgag
1440

agacttta ttcagctatc cctctatata ataggtacca ccgataatgc tattagccca
1500

ccgtgggt ttttctaaat attaataaggg gggcttgatt caacaaagcc acagacttaa
1560

gttgaaatt ttcttcagga attttctagt aaccaggtc taaagtagct acagaaaggg
1620

atattatg tgtgattatt tttcttctta tgctatatcc ccaagttttt cagactcatt
1680

agtaaagg ctagagtgag taaggaatag agccaaatga ggtaggtgtc tgagccatga
1740

atataaata ctgaaagatg tcacttttat tcaggaaata gggggagttc aagtcgtata
1800

ttcctact cgaaaatctt gacacctgac tttccaggat gcacattttc atacgtagac
1860

gtttcctc ttggtttctt cagttaagtc aaaacaacac gttcctcttt ccccatatat
1920

atatattt ttgctcgtta gtgtatttct tgagctgttt tcatgttggt tatttcctgt
1980

gtgaaatg gtgttttttt ttttgttggt gggttttttt tttttttttt aacttgggac
2040

ccaagttg taaagatgta tgtttttacc tgacagttat accacaggta gactgtcaag
2100

gagaagag tgaatcaata acttgtattt gttttaaaaa ttaaattaat ccttgataag

eolf-seql-S000001.txt

2160

gttgctttt ttttttagg agttagtcct tgaccactag tttgatgcca tctccatttt
2220

ggtgacctg tttcaccagc aggccgtgta ctctccatga ctaactgtgt aagtgcctaa
2280

atggaataa attgcttttc tacataaaaa aaaa
2314

210> 28

211> 2848

212> DNA

213> Homo sapiens

400> 28

cttctcccc ggcggttagt gctgagagtg cggagtgtgt gctccgggct cggaacacac
60

tttattatt.aaaaaatcca.aaaaaatct aaaaaaatct tttaaaaaac cccaaaaaaa.
120

ttacaaaaa atccgcgtct ccccgccgg agacttttat ttttttctt cctcttttat
180

aaataaccc ggtgaagcag ccgagaccga cccgcccgcc cgcggccccg cagcagctcc
240

agaaggaac caagagaccg aggccctccc gctgcccgga cccgacaccg ccaccctcgc
300

ccccgccgg cagccggcag ccagcggcag tggatcgacc ccgttctgcg gccgttgagt
360

gttttcaat tccggttgat tttgtccct ctgcgcttgc tccccgctcc cctccccccg
420

ctccggccc ccagccccgg cactcgtct cctcctctca cggaaaggte gcggcctgtg
480

cctgcgggc agccgtgccg agatgaaccc cagtgcccc agctacccca tggcctcgct
540

tacgtgggg gacctccacc ccgacgtgac cgaggcgatg ctctacgaga agttcagccc
600

jccgggccc atcctctcca tccgggtctg cagggacatg atcaccgcc gctccttggg
660

acgcgtat gtgaacttcc agcagccggc ggacgcggag cgtgcttttg acaccatgaa
720

ttgatgtt ataaagggca agccagtaag catcatgtgg tctcagcgtg atccatcact

eolf-seql-S000001.txt

780

icgcaaaagt ggagtaggca acatattcat taaaaatctg gacaaatcca ttgataataa
840

agcactgtat gatacathtt ctgcttttgg taacatcctt tcatgtaagg tggtttgtga
900

gaaaatggt tccaagggt acggatttgt acactttgag acgcaggaag cagctgaaag
960

agctattgaa aaaatgaatg gaatgctcct aaatgatcgc aaagtatttg ttggacgatt
1020

aaagtctcgt aaagaacgag aagctgaact tggagctagg gcaaaagaat tcaccaatgt
1080

tacatcaag aattttggag aagacatgga tgatgagcgc ctttaaggatc tctttgggcc
1140

gccttaagt gtgaaagtaa tgactgatga aagtggaaaa tccaaaggat ttggatttgt
1200

agctttgaa aggcataag atgcacagaa agctgtggat gagatgaacg gaaaggagct
1260

aatggaaaa caaatttatg ttggtcgagc tcagaaaaag gtggaacggc agacggaact
1320

aagcgcaaa tttgaacaga tgaacaaga taggatcacc agataccagg gtgttaatct
1380

tatgtgaaa aatcttgatg atggtattga tgatgaacgt ctccggaaag agttttctcc
1440

tttggatca atcactagt caaaggttat gatggagggt ggtcgcagca aagggtttgg
1500

tttgtatgt ttctcctccc cagaagaagc cactaaagca gttacagaaa tgaacggtag
1560

attgtggcc acaaagccat tgtatgtagc tttagctcag cgcaaagaag agcgccaggc
1620

cacctcact aaccagtata tgcagagaat ggcaagtgt cagagctgtt ccaaccctgt
1680

atcaacccc taccagccag cacctccttc aggttacttc atggcagcta tcccacagac
1740

cagaaccgt gctgcatact atcctcctag ccaagttgct caactaagac caagtcctcg
1800

tggactgct cagggtgcca gacctcatcc attccaaaat atgcccgggtg ctatccgccc
1860

eolf-seq1-S000001.txt

igctgctcct agaccacccat ttagtactat gagaccagct tcttcacagg ttccacgagt
1920

atgtcaaca cagcgtgttg ctaacacatc aacacagaca atgggtccac gtccctgcagc
1980

gcagccgct gcagctactc ctgctgtccg caccgttcca cagtataaat atgctgcagg
2040

gttcgcaat cctcagcaac atcttaatgc acagccacaa gttacaatgc aacagcctgc
2100

gttcattgta caaggctcagg aacctttgac tgcttccatg ttggcatctg cccctcctca
2160

gagcaaaaag caaatgttgg gtgaacggct gtttcctctt attcaagcca tgcaccctac
2220

cttgctggg aaaatcactg gcatgttggt ggagattgat aattcagaac ttcttcatat
2280

ctcgagtct ccagagtcac tccgttctaa ggttgatgaa gctgtagctg tactacaagc
2340

caccaagct aaagaggctg cccagaaaagc agttaacagt gccaccggtg ttccaactgt
2400

taaaattga tcagggacca tgaaaagaaa cttgtgcttc accgaagaaa aatatctaaa
2460

atcgaaaaa cttaaattatt atggaaaaaa aacattgcaa aatataaaat aaataaaaaa
2520

ggaaaggaa actttgaacc ttatgtaccg agcaaagcc aggtctagca aacataatgc
2580

agtcctaga ttacttattg atttaaaaac aaaaaaacac aaaaaatagt aaaatataaa
2640

acaaattaa tgttttatag accctgggaa aaagaatttt cagcaaagta caaaaattta
2700

agcattcct ttctttaatt ttgtaattct ttactgtgga atagctcaga atgtcagttc
2760

gttttaagt aacagaattg ataactgagc aaggaaacgt aatttggatt ataaaattct
2820

gctttaata aaaattcctt aaacagtg
2848

210> 29

211> 2424

eolf-seql-S000001.txt

:212> DNA

:213> Homo sapiens

:400> 29

:ctggaactc tagcacgccg agtgaacttg aatctttggc tatttaagga ggactggggtt
60

.gttggaag ttgcggtgat ccagcgcaga gccccgtcct gattgatcgc atcgcggggc
120

.cagatgact gtaaaatgaa tagatgaaat tcttgcttct cgaagatttt cttgggcac
180

.cccgaaaag tgcgttttaa ggogaagtca tgatgtattc tcccatctgt ctactcagg
240

tgaatttca ccattcatg gaagcacttc ttccacatgt ccgtgcaatt gcctatactt
300

.gttcaacct gcaggctcga aaacgcaagt actttaaaaa gcatgagaag cgaatgtcaa
360

ggatgaaga aagagcagtc aaagatgagc ttctcagtga aaagcctgaa atcaaacaga
420

gtgggcac caggctcctt gccaaactgc gcaaagatat tcgccaggag tatcgagagg
480

ctttgtgct caccgtgact ggcaagaagc acccgtgctg tgtcttatcc aatcccgacc
540

gaagggtaa gattaggaga atcgactgcc tgcgacaggc agacaaagtc tggcgtctgg
600

tctagtcac ggtgatcctg ttcaaaggca tccccttgga aagtaccgat ggagagcggc
660

catgaaatc cccacattgc acaaaccag cactttgtgt ccagccacat catatcacag
720

atcagttaa ggagcttgat ttgtttttgg catactacgt gcaggagcaa gattctggac
780

atcaggaag tccaagccac aatgatcctg ccaagaatcc tccaggttac cttgaggata
840

ttttgtaaa atctggagtc ttcaatgtat cagaacttgt aagagtatcc agaacgccca
900

aaccagggt aactggagtc aacttcccaa ttggagaaat cccaagccaa ccatactatc
960

tgacatgaa ctcggggggc aatcttcaga ggtctctgtc ttctccacca agcagcaaaa
1020

eolf-seql-S000001.txt

acccaaaac tatatccata gaygaaaata tggaaccaag tcctacagga gacttttacc
1080

ctctccaag ttcaccagct gctggaagtc gaacatggca cgaaagagat caagatatgt
1140

ttctccgac tactatgaag aagcctgaaa agccattgtt cagctctgca tctccacagg
1200

ttttcccc aagactgagc actttcccc agcaccacca tcccggaata cctggagttg
1260

acacagtgt catctcaact cgaactccac ctccaccttc accgttgcca tttccaacac
1320

agctatcct tcctccagcc ccctcgagct actttttctca tccaacaatc agatatactc
1380

ccacctgaa tcctcaggat actctgaaga actatgtacc ttcttatgac ccattccagtc
1440

acaaaccag ccagtcctgg tacctgggct agcttggttc ctttccaagt gtcaaatagg
1500

cacccatct taccggccaa tgtccaaaat tacggtttga acataattgg agaacccttc
1560

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1620

tttttaaat aaaaaaaagg aaaagaggaa gactggacaa aacaacacaa aggcagaaaag
1680

aaagaaact gaagaaagaa gataatagac cagcaattgc agcacttaca atcactaatt
1740

ccttaagggt taaactgtaa tgacataaaa agggctcgatg atatttcact gatggtagat
1800

gcagccctt gcaacgtagc ctttgttaca tgaagtccgc tgggaaatag atgttctgtc
1860

ctatgacaa tatattttaa ctgactttct agatgcctta atatttgcat gataagctag
1920

cttattgggt ttagtattct tgttgtttac gcatggaatc actattcctg gttatctcac
1980

aacgaaggc taggaggcgg cgtcagagat gctgggtgac agagccatga gccagccatt
2040

ataagcac tctgatttct aaaagttaaa aaaaatatat gaaatctctg tagcctttag
2100

atcagtag agatttatta aatttcggcc ctttaaccag cttttccag tgtgtaaccc

eolf-seql-S000001.txt

2160

gtttgaaat cttaaaaaaa gaaaaaatga aaaaaaaagg aaaaaaagaa aaaaggaaaa
2220

acagtttg aacacaaagg ctctatggaa gaaatgcctc tatgtaggtg aagtgttctc
2280

tgcatgca acagtaaaaa ttaatatata attttcccca caaaagaaac acttaacaga
2340

gcaagtgc aatttattaa atttatattc ttaaaggggg aattcatgga ttattaaggt
2400

tttcaggcc cttggggact ctta
2424

!10> 30

!11> 838

!12> DNA

!13> Homo sapiens

!00> 30

tctttttc cggctggaac catggagggt gtagaagaga agaagaagga gggttcctgct
60

gccagaaa cccttaagaa aaagcgaagg aatttcgcag agctgaagat caagcgctg
120

aaagaagt ttgcccaaaa gatgcttcga aaggcaagga ggaagcttat ctatgaaaaa
180

aaagcact atcacaagga atataggcag atgtacagaa ctgaaattcg aatggcgagg
240

ggcaagaa aagctggcaa cttctatgta cctgcagaac ccaaattggc gtttgctatc
300

aatcagag gtatcaatgg agtgagccca aaggttcgaa aggtgttgca gcttccttcg
360

tcgtcaaa tcttcaatgg aacctttgtg aagctcaaca aggcttcgat taacatgctg
420

gattgtag agccatatat tgcattgggg taccccaatc tgaagtcagt aaatgaacta
480

ctacaagc gtggttatgg caaaatcaat aagaagcgaa ttgctttgac agataacgct
540

gattgctc gatctcttgg taaatacggc atcatctgca tggaggattt gattcatgag
600

ctatactg ttggaaaacg cttcaaagag gcaaataact tcctgtggcc cttcaaattg

eolf-seql-S000001.txt

660

ttctccac gaggtggaat gaagaaaaag accaccatt ttgtagaagg tggagatgct
720

jcaacaggg aggaccagat caacaggctt attagaagaa tgaactaagg tgtctaccat
780

attatTTTT ctaagctggt tggtaataa acagtacctg ctctcaaatt gaaaaaaa
838

?10> 31

?11> 3514

?12> DNA

?13> Homo sapiens

!00> 31

:catctggc cagccccgc cctcctccc ggcgtcagcc cgccagaggc cgcgcggggc
60

:gggcttcg gccgatcagc ccgggaggcc ccgccgcgcc cccttggccc gcgcgcccg
120

:tcacagtg gaagaggcgc ccgcgctgcg ctgcccgag gagccgtcgc gcgcccgctt
180

:tggtcggc tggttcctgc cagctcgagg aaaaaacacg cgtgcgcgcg gcgggcgagc
240

:gctcgccg cctcagtcgc cagcgccggg cgcagtccgc cttttccgg agcagactgg
300

:gcggtgct agtcggtagc agcgcccgcc gcagcggctc cgcactggcg aaccgagggc
360

:aaaaaggc ggggttgacg gctttttggt aggagtgggc tggaccggac gccagagaca
420

:ggctccca aggcaagagg gactgtggcc ctgcgtcgcc tctgctcgga actgctgacc
480

:aggaattt acgccccttc gtttttctct tctgattctt ctcttctccc aagcccgct
540

:cctcacgc gtggcctctc tccttgccgg gagggccgcg atggaggtcc cgcccaggct
600

:ccatgtg ccgcgcgat tgttccctc cgctcccgt actttagcct ccgcagcct
660

:ccattgg cggccgcggc cgccgcggca gtagccccg ctctccctt cgctcgctcc
720

gctccgcc cggcaggggg cgcgccgggc ccagcgccac gtcaccgccc agcagccctc

eolf-seql-S000001.txt

780

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840

cgccatttt aaatccagct ccatacaacg ctccgccgcc gctgctgccg cgacccggac
900

jcgcgccag cccccctg ccgacagctc cgtcactatg gaggatatga acgagtacag
960

atatagag gaattcgcag agggatccaa gatcaacgcg agcaagaatc agcaggatga
1020

jgtaaaatg tttattggag gcttgagctg ggatacaagc aaaaaagatc tgacagagta
1080

tggtctcga tttggggaag ttgtagactg cacaattaaa acagatccag tcaactgggag
1140

caagagga tttggatttg tgcttttcaa agatgctgct agtgttgata aggttttgga
1200

tgaaagaa cacaaactgg atggcaaatt gatagatccc aaaagggcca aagctttaaa
1260

ggaaagaa cctcccaaaa aggtttttgt gggtaggattg agcccggata cttctgaaga
1320

aaattaaa gaatattttg gagccttttg agagattgaa aatattgaac ttcccatgga
1380

caaaaaca aatgaaagaa gaggattttg ttttatcaca tatactgatg aagagccagt
1440

aaaaattg ttagaaagca gataccatca aattggttct gggaagtgtg aaatcaaagt
1500

cacaaccc aaagaggtat ataggcagca acagcaacaa caaaaagggtg gaagaggtgc
1560

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1620

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1680

atcaaaac tatagtggct atggcggata tgattatact gggataaact atgggaacta
1740

gatatgga cagggatatg cagactacag tggccaacag agcacttatg gcaaggcatc
1800

gagggggt ggcaatcacc aaaacaatta ccagccatac taaaggagaa cattggagaa
1860

eolf-seql-S000001.txt

icagcggga acttcattgc aggccgtgtg tcaccctgac cacgtctatc tctgggggtc
1920

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1980

aaagtaacc catcttgag gacgacattg aagattggc ttctgttgat ctaagatgat
2040

ttttgtaa aagactttct agtgtacaag acaccattgt gtccaactgt atatactgc
2100

tattagttt tctttgtttt tactttgtcc ttgctatct gtgttatgac tcaatgtgga
2160

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2220

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2280

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2340

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2400

taaggctt catcttctcc ctgtaactga gatttctacc acaccttga acaatgttct
2460

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2520

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2580

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2640

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2700

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2760

aagttgta ttagctgtta atgctctgtg agtttagaga aaagtcttga tagtaaatct
2820

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2880

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2940

eolf-seql-S000001.txt

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3000

tttcagagg acctggaata ataataagct ttggattttg cattcagtgt agttggattt
3060

gggaccttg gcctcagtgt tatttactgg gattggcata cgtgttcaca ggcagagtag
3120

tgatctcac acaacgggtg atctcacaaa actggtaagt ttcttatgct catgagccct
3180

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3240

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3300

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3360

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3420

cctgtaag ttcaaattta tgattaggtg acgagttgac attgagattg tccttttccc
3480

tgatcaaaa aaatgaataa agccttttta aacg
3514

?10> 32

?11> 1186

?12> DNA

?13> Homo sapiens

!00> 32

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60

:gataagtc ttaatgctca aagtatgtta aaaatagatg tagtaaatca gtccctttgt
120

:atgtcctt ttgttagttt ttaggaaggc ctgtcctctg ggagtgcctt ttattagtcc
180

:cccttgga gctagacatc ctgtacttag tcacggggat ggtggaagag ggagaagagg
240

:gggtgaag ggaagggtc tttgctagta tctccatata tagacgatgg ttttagatga
300

:accacagg tctacaagag cgttttttagt aaagtgcctg tgttcattgt ggacaaagtt
360

eolf-seql-S000001.txt

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420

agtgaatta gcctatttgt aaataccttt gttataattg ataggatata tcttggacat
480

jaattgtta agccacctct gagcagtgtg tgtcaggact tgttcattag gttggcagca
540

aggggcaga aggaattata caggtagaga tgtatgcaga tgtgtccata tatgtccata
600

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720

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780

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840

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900

tgagttggt gtagtgtatt cttgggtatc agaataactca tatagctttg ggattttgaa
960

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1020

taattggat gttgtgccta cacacaggat ctagaagaat atgtcaaact ataaactgct
1080

ttgattgtg aatgactttg ttctttgctt gtgtttttca atttctata atgcacatac
1140

tacttttaa aaaataaagg ttatttttaa agcctgtatt aagccc
1186

:10> 33

:11> 606

:12> DNA

:13> Homo sapiens

00> 33

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60

atctgtga gcccgcgag tataccat gagcaaagct caccctccc agttgaaaaa
120

eolf-seql-S000001.txt

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180

cggggattt gatcccttta tgaaccttgt gatagatgaa tgtgtggaga tggcgactag
240

ggacaacag aacaatattg gaatgggtggc aatacgagga aatagtatca tcatgttaga
300

gccttgga cagagtataaa taatggctgt tcagcagaga aacccatgtc ctctctccat
360

gggcctgtt ttactatgat gtaaaaatta ggtcatgtac attttcatat tagacttttt
420

ctaaataaa cttttgtaat agtcaaaaat gctttctcag atgttctgaa tatagaatat
480

agctctcat tccagttttt tctaacatga attttctcgg ttgacattga tttcaaaggg
540

tttatgcat taaagtgaag gaatcttatt aaatgcgaaa aaaaaaaaaa aaaaaaaaaa
600

aaaaa
606

?10> 34

?11> 1579

?12> DNA

?13> Homo sapiens

!00> 34

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120

cttccacg tgggtgaagg actgtgccag ctgagaggtg gtagagcagg aagctgcctg
180

acctccat ttatttggtg aaaaaccgcc gcccttaaga gagcaagtcg agggccgtgt
240

gagttgga ggagagaaat gaaattttgg aagagtcagc agaagatcgt cagtatttaa
300

acatcaca tcatgcgtga gtacaagcta gtggtccttg gttcaggagg cgttgggaag
360

tgctctga cagttcagtt tgttcaggga atttttgttg aaaaatatga cccaacgata
420

eolf-seql-S000001.txt

aagattcct acagaaagca agttgaagtc gattgccaac agtgtatgct cgaaatcctg
480

atactgcag ggacagagca atttacagca atgagggatt tgtatatgaa gaacggccaa
540

gttttgcac tagtatattc tattacagct cagtccacgt ttaacgactt acaggacctg
600

gggaacaga ttttacgggt taaggacacg gaagatgttc caatgatttt gggttgcaat
660

aatgtgacc tggaagatga gcgagtagtt ggcaaagagc agggccagaa tttagcaaga
720

agtgggtgta actgtgcctt tttagaatct tctgcaaagt caaagatcaa tgттаатgag
780

tattttatg acctggtcag acagataaat aggaaaacac cagtggaaaa gaagaagcct
840

aaaagaaat catgtctgct gctctaggcc catagtcagc agcagctctg agccagatta
900

aggaatgaa gaactggtgc ctaattggaa agtgccagca ttccagactt caaaaataaa
960

aatctgaag aggcttctcc tgttttatat attatgtgaa gaatttagat cttatatggg
1020

ttgcacaag ttccctggag aaaaaaattg ctctgtgtat atctcttgga aaataagaca
1080

tagtatttc tcctttgcaa tagcagttat aacagatgtg aaaatatact tgactctaат
1140

tgattatac aaaagagcat ggatgcattt caaatgttag atattgctac tataatcaaa
1200

gatttcata ttgatctttt tatcatgac ctacctatca agcactaaaa agttgaacca
1260

ataacttta tatctgtaat gatactgatt atgaaatgtc cctgaaact cattgcagca
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1380

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1440

aaaactggg ataactgatt tctatggctt tcaaagctaa aatatataat atactaaacc
1500

actctaata ttgcttcttg tgttttactg tcagattaaa ttacagcttt tatggatgat

eolf-seql-S000001.txt

1560

aaatttttag tacattttc

1579

210> 35

211> 4160

212> DNA

213> Homo sapiens

400> 35

cgcttgccg aggattgcgt tgacgagact cttattttatt gtcaccaacc tgtggtggaa
60ttgcagttg cacattggat ctgattcgcc ccgccccgaa tgacgcctgc ccggaggcag
120gaaagtaca gccgcgccgc cccaagtcag cctggacaca taaatcagca cgcggccgga
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360ggggagcca ggcctgggct ccgggtcccc aagacccttg tgctcgttgt cgcgcggtc
420tgctgttg tctcagctga gtctgctctg atcacccaac aagacctagc tccccagcag
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840

gcacagtg gggaagcccc agctgtggag gagacgggtga cctccagccc agggactcct

eolf-seql-S000001.txt

900

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960

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1020

gcattctgt caggtggtgg tggggaccct gagcgtgtgg acagaagctc acaacgacct
1080

gggctgagg acaatgtcct caatgagatc gtgagtatct tgcagcccac ccaggtccct
1140

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1200

gggagtcag agcattctgt ggaaccggca gaagctgaaa ggtctcagag gaggaggctg
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1320

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1440

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1860

gagatttg gtttgggatg tcattgtttt cacagcactt tttatccta atgtaaagtc
1920

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1980

eolf-seql-S000001.txt

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2040

cccaggctg gaggcgcaatg gtgcaatctt ggctcactat agccttgacc tctcaggctc
2100

agcgattct cccacctcag ccacccaaat agctgggacc acagggtgtgc accaccacgc
2160

cggctaatt ttttgtatct tgtctagata taggggctct ctatgttgct cagggtggtc
2220

cgaattcct ggactcaagc agtctgcccc cctcagactc ccaaagcggg ggaattagag
2280

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2340

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2400

aaacataa aaggaggaga catacaatgg gggaagaaga agaagtcacc tgtaagatgt
2460

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3000

ctgtcaatt cttaaactgt gtggcaacag gacctagaat ggctgacgca ttaagggttt
3060

eolf-seql-S000001.txt

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3120

jcaaaccct tctccatagt atttcagtca tggaaggatc atttatgcag gtagtcattc
3180

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3660

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3900

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4020

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4080

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4140

aaaaaaaa aaaaaaaaaa

eolf-seql-S000001.txt

4160

```
210> 36
211> 666
212> DNA
213> Homo sapiens

400> 36
caggcttgg ctgcgccctc tcgcgccgca cgctctgcgg gtctctcct tcttccgagc
 60

tctcctctg gccgccgcgc gggagagagg ccgagatggc agatgagatt gccaaggctc
120

ggctcgtcg gcctggtggc gacacgatct ttgggaagat catccgcaag gaaataccag
180

caaaatcat ttttgaggat gaccggtgcc ttgctttcca tgacatttcc cctcaagcac
240

aacacattt tctggtgata cccaagaaac atatatccca gatttctgtg gcagaagatg
300

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360

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420

tcacgttca tctccatggt cttggagggtc ggcaaagca ttggcctcct ggttaagcac
480

ttttgggga taattttctc ttctttaggc aatgattaag ttaggcaatt tccagtatgt
540

aagtaacac acttattttt gcctgtgtat ggagagattc aagaaataat tttaaaaccg
600

atacataat aaaagacatt gttgcatggc ttgtaaaaaa aaaaaaaaaa aaaaaaaaaa
660

aaaaa
666

210> 37
211> 3683
212> DNA
213> Homo sapiens

100> 37
ctggcaggc ggcggctgca gggcagggtcc aggggccaca tggctgaggg ggacgcaggg
 60
```

eolf-seql-S000001.txt

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120

gtgtcattg atgactgtgc caaaatattt tgtattagaa ttagcgacga tatagatgac
180

ccaaatgga cactttgctt gcaggtgatg ctgccgaatg aatacccagg tacagctcca
240

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300

gccttgagg aaatatatat tcagaatatt ggtgaaagta ttctttacct gtgggtggag
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420

agaaaactg aagaggaaga tgttgaatgt gaagatgatc tcatttttagc atgtcagccg
480

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540

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600

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660

agaataaga aaatagctag tgccaccac aacatctatg cctacagaat atattgtgag
720

ataaacaga ccttcttaca ggattgtgag gatgatgggg aaacagcagc tgggtggcgt
780

ctcttcac tcatggagat tttgaatgtg aagaatgtca tgggtggtagt atcacgtgg
840

atggaggga ttctgctagg accagatcgc tttaaacata tcaacaactg tgccagaaac
900

actagtgg aaaagaacta cacaaattca cctgaggagt catctaaggc tttgggaaag
960

caaaaaag taagaaaaga caagaagagg aatgaacatt aatacctgaa actataggaa
1020

gttaattt gcctataatt atatatacat tccatagtca tcaaggaata tattgtgcag
1080

agagtatc cttgactgct taagtcagcc agttcagcat ggataccaac attagctttt
1140

ctcttggtt atatcatctg ccaaaaatag agaacttatg atctattcat gtgtgtttca

eolf-seql-S000001.txt

1200

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1260

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1320

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1380

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1440

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1500

ctttcattt tatagtgttc atcattgagt aatggattaa gtgaaaatcc aggagtatcc
1560

ctgcagtt atgtgctgag gtgataattc atccaacata ttgttagca taaatattat
1620

cttcagttt ctgttgcaaa ttggtgattg tgaaattaca gaaagtgatt ttctagtctg
1680

cttttttgt ttaattcttg taatgtaagc aataaatatg gagtgtcagt agtctccttc
1740

acccagaa atgtgttggt gtaacattct cgtttctttt aacaacctgg aagtacctt
1800

ctgtgatct tcaactgagga attagaacta tgatagaagt taggctgtgg caaatgggac
1860

ctcgtagag tgggatagag gtggcagaat gaacctgggtg tagggcagga gtatgttgtg
1920

agttacatc aatttgatgc atgctttcca tctgcactcc agacggcttt ctcaattcca
1980

gattttgca gagagaagga gcaaaccttt tcattggaaa aacagaaaca accctcccc
2040

gattttttc cctctattc atcaaacctt tatgtatctt tcattttcca gttacctcta
2100

gcatttaga tagtgaaatt tacctttgag atataacaat aagtgattaa ctgttcactt
2160

agatgtaa tggcaaacaa ttgttaaaag ttattaactg atcacagatt tgcttgact
2220

ccctccca gggaggggaa agaagttagg aggcaacttt gggatgggtgc tagagcatgg
2280

eolf-seql-S000001.txt

aagcacaga gaattggaca aacaggtctt tttctctttt ctctgatgtt ttacctttaa
2340

agatccaac atccttaccg ttggtatttt tagtaagggt atagtaaata gctttacacc
2400

ggatggatt ctgaaatata aattctaaat tatatttggt ataactatat tttatgttgt
2460

tggtatcag gagccatcag agaatgacct ttttggtgtt ggaacacttg gttccatgaa
2520

agtatgctt tgtgttttaa ctgttaaaat aatttaaaaa ttaattattt tacataatta
2580

agaagttaa aaactattaa cattaaataa tttcacaatt tcaacatgtc aaacctatga
2640

gggagatag gaaacaatga gaaacttact tttgctcctt tatacagaat tattaactat
2700

ttttactaa ctaaaaaact ctagtattct ttacctaaag tcaattggct ggtaagaggg
2760

gagatgcaa aattctccag ctctgaactt ggagctactt cacactctac tcttaatgga
2820

acttgaact aatgatagat agtatttttt tcctctattt aaaatttttg tcttgattag
2880

agatttttc agttctccat ataataattt tctacaatca gatctatgct gtggcatatt
2940

tgctttatt taaaaatttt tttttagaga tgagttcttg ctctgtcacc taggctggag
3000

gcagtggca tgatcatggc tcaactgcagc cttagacctc cagcctgcca agtagctggg
3060

ttacagaca ggcattgtgt attacacctg gctaattttt aaagtttttt ttgtaaagat
3120

gggtctttc tatgttgccc aggctcgtct tgagctcctg gcctcaatcg atcttctgc
3180

agggttttg gaattacagg tgtgagccac catgcctggc ctgctttgac atattttata
3240

gtgtttaat tacaaatagt cttcatatgc cagaatataa gagcaagtgt tatctacttt
3300

agatggga attgcagaag ctgcatcaaa agtatgcttt gaggtatata tagtgaaaca
3360

eolf-seql-S000001.txt

agcctttct gaagagaatt atatcaaact aattacaacc aagaaataat agtatgaagc
3420

gatgctgtt tggaggacag gaaaatttat cgggaaaatt acataatccc tctgattcca
3480

tatccagag atagccatta ttattaatat ttggtatgta catccttata ttatTTTTTT
3540

ttatgcatg attttgtata tatggttatt tttctttcca taaaaatggg attaaactgt
3600

tatactgtt ttgtagccta catatttcat atagaagtat attgttaaca ttttccatgt
3660

aataaatat tctatggctt tct
3683

210> 38

211> 3251

212> DNA

213> Homo sapiens

400> 38

agcaactat gaaataatcg tagtatgaga ggcagagatc ggggcgagac aatggggatg
60

gggcgcggg agccccgttc cggcttagca gcacctccca gcccgcgaga ataaaaccga
120

cgcgcccc tccgcgcgcg cctcccccg agtgcggagc gggaggaggc ggcggcggcc
180

aggaggagg aggaggaggc cccggaggag gaggcgttgg aggtcgaggc ggaggcggag
240

aggaggagg ccgaggcgcc ggaggaggcc gaggcgccgg agcaggagga ggccggccgg
300

ggcggcatg agacgagcgt ggcggccgcg gctgctcggg gccgcgctgg ttgccattg
360

cagcggcgt ctgcagctcg cttcaagatg gccgcttggc tcgcattcat tttctgctga
420

cgaacttta actttcattg tcttttccgc ccgcttcgat cgcctcgcgc cggctgctct
480

ccgggatt ttttatcaag cagaaatgca tcgaacaacg agaatacaaga tcaactgagct
540

atccccac ctgatgtgtg tgctttgtgg agggacttc attgatgcca caaccataat
600

eolf-seql-S000001.txt

gaatgtcta cattccttct gtaaaacgtg tattgttcgt tacctggaga ccagcaagta
660

tgtcctatt tgtgatgtcc aagttcacaa gaccagacca ctactgaata taaggtcaga
720

aaaactctc caagatattg tatacaaatt agttccaggg cttttcaaaa atgaaatgaa
780

agaagaagg gatttttatg cagctcatcc ttctgctgat gctgccaatg gctctaataga
840

gatagagga gaggttgcag atgaagataa gagaattata actgatgatg agataataag
900

ttatccatt gaattctttg accagaacag attggatcgg aaagtaaaca aagacaaaga
960

aaatctaag gaggaggtga atgataaaaag atacttacga tgcccagcag caatgactgt
1020

atgcactta agaaagtttc tcagaagtaa aatggacata cctaatactt tccagattga
1080

gtcatgtat gaggaggaac ctttaaagga ttattataca ctaatggata ttgcctacat
1140

tatacctgg agaaggaatg gtccacttcc attgaaatac agagttcgac ctacttgtaa
1200

agaatgaag atcagtcacc agagagatgg actgacaaat gctggagaac tggaaagtga
1260

ctggggagt gacaaggcca acagcccagc aggaggtatt cctccacct cttcttgttt
1320

ctagcccc agtactccag tgcagtctcc tcatccacag tttcctcaca tttccagtac
1380

atgaatgga accagcaaca gccccagcgg taaccaccaa tcttcttttg ccaatagacc
1440

gaaaaatca tcagtaaag ggtcatcagc aacttcttct ggttgatacc tgagactgtt
1500

aggaaaaaa attttaaacc cctgatttat atagatatct tcatgccatt acagctttct
1560

gatgctaata acatgtgact atcgtccaat ttgctttctt ttgtagtgac attaaatttg
1620

tataaaaag atggactaca tgtgatactc ctatggacgt taattgaaaa gaaagattgt
1680

ttataaag aattggtttc ttggaaagca ggcaagactt tttctctgtg ttaggaaaga

eolf-seql-S000001.txt

1740

gggaaatgg tttctgtaac cattgtttgg atttggaagt actctgcagt ggacataagc
1800

ttggggccat agtttggttaa tctcaactaa cgcttacatt acattctcct tgatcgttct
1860

gttattacg ctgttttgtg aacctgtaga aaacaagtgc tttttatctt gaaattcaac
1920

aacggaaag aatatgcata gaataatgca ttctatgtag ccatgtcact gtgaataacg
1980

tttcttgca tatttagcca ttttgattcc tgtttgattt atacttctct gttgctacgc
2040

aaaccgatc aaagaaaagt gaacttcagt ttacaatct gtatgcctaa aagcgggtac
2100

accgtttat tttactgact tgtttaaatg attcgctttt gtaagaatca gatggcatta
2160

gcttgttgt acaatgccat attggtatat gacataacag gaaacagtat tgtatgatat
2220

tttataaat gctataaaga aatattgtgt ttcatgcatt cagaaatgat tgttaaaatt
2280

ccccaactg gttcgacctt tgcagatacc cataacctat gttgagcctt gcttaccagc
2340

agaatatt tttaatgtgg atatctaatt ctaaagtctg ttccattaga agcaattggc
2400

atctttct atactttata tacttttctc cagtaataca tgtttacttt aaaaattgtt
2460

agtggaaga aaaaccttta actgagaaat atggaaaccg tcttaatttt ccattggcta
2520

gatggaatt aatattgtat tttaaaaatg catattgatc actataattc taaaacaatt
2580

ttaaataa accagcaggt tgctaaaaga aggcatTTTA tctaaagtta ttttaatagg
2640

gtatagca gtaattttaa atttaagagt tgcttttaca gttacaatg gaatatgcct
2700

tctgctat gtctgaaaat agaagctatt tattatgagc ttctacaggt atttttaaat
2760

agcaagca tgttgaattt aaaatatgaa taaccccacc caacaatttt cagtttattt
2820

eolf-seql-S000001.txt

ttgctttgg tcgaacttgg tgtgtgttca tcacccatca gttatttgtg aggggtgttta
2880

tctatatga atattgtttc atgtttgtat gggaaaattg tagctaaaca tttcattgtc
2940

ccagtctgc aaaagaagca caattctatt gctttgtctt gcttatagtc attaaatcat
3000

acttttaca tatattgctg ttacttctgc tttctttaaa aatatagtaa aggatgtttt
3060

tgaagtcac aagatacata tattttttatt ttgacctaaa tttgtacagt cccattgtaa
3120

tgttgtttc taattataga tgtaaaatga aatttcattt gtaattggaa aaaatccaat
3180

aaaaggata ttcatttaga aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa
3240

aaaaaaaaa a
3251

210> 39
211> 2855
212> DNA
213> Homo sapiens

400> 39
agtggcagt tatatagacc ggcggcggag cacgcgtgtg tgcggacgca gttgcgtgag
60

ggtttgtag taccctcggg gctgtggtgc agagctagtt cctctccagc tcagccgcgt
120

ggtttggac atatttgact cttttccccc caggttgaat tgaccaaagc aatggtgatg
180

agaagccta gtcccttgcg ggtcgggcgg gaatttgtga gacagtatta cacactgctg
240

accaggccc cagacatgct gcatagattt tatggaaaga actcttctta tgtccatggg
300

gattggatt caaatggaaa gccagcagat gcagtctacg gacagaaaga aatccacagg
360

agtgatgt cacaaaactt caccaactgc cacaccaaga ttcgccatgt tgatgctcat
420

cacgctaa atgatgggtg ggtagtccag gtgatggggc ttctctctaa caacaaccag
480

eolf-seql-S000001.txt

ctttgagga gattcatgca aacgtttgtc cttgctcctg aggggtctgt tgcaaataaa
540

tctatgttc acaatgatat cttcagatac caagatgagg tctttggtgg gtttgtcact
600

agcctcagg aggagtctga agaagaagta gaggaacctg aagaaagaca gcaaacacct
660

agggtggtac ctgatgattc tggaactttc tatgatcagg cagttgtcag taatgacatg
720

aagaacatt tagaggagcc tgttgctgaa ccagagcctg atcctgaacc agaaccagaa
780

aagaacctg tatctgaaat ccaagaggaa aagcctgagc cagtattaga agaaactgcc
840

ctgaggatg ctcagaagag ttcttctcca gcacctgcag acatagctca gacagtacag
900

aagacttga ggacattttc ttgggcatct gtgaccagta agaatcttcc acccagtgga
960

ctgttccag ttactgggat accacctcat gttgttaaag taccagcttc acagccccgt
1020

cagagtcta agcctgaatc tcagattcca ccacaaagac ctcagcggga tcaaagagtg
1080

jagaacaac gaataaatat tcttcccaa aggggaccca gaccaatccg tgaggctggt
1140

agcaagggtg acattgaacc ccgaagaatg gtgagacacc ctgacagtca ccaactcttc
1200

ctggcaacc tgcctcatga agtggacaaa tcagagctta aagatttctt tcaaagttat
1260

jaaacgtgg tggagttgcg cattaacagt ggtgggaaat tacccaattt tggttttgtt
1320

gtttgatg attctgagcc tgttcagaaa gtccttagca acaggcccat catgttcaga
1380

ctgagggtcc gtctgaatgt cgaagagaag aagactcgag ctgccaggga aggcgaccga
1440

agataatc gccttcgggg acctggaggc cctcgagggtg ggctgggtgg tggaatgaga
1500

ccctcccc gtggaggcat ggtgcagaaa ccaggatttg gagtgggaag ggggcttgcg
1560

eolf-seql-S000001.txt

cacggcagt gaatcttcat ggatcttcat gcagccatac aaaccctggt tccaacagaa
1620

ggtgaattt tcgacagcct ttggtatctt ggagtatgac cccagtctgt tataaactgc
1680

taagtttgt ataattttac tttttttgtg tgtaaatggt gtgtgctccc tctccctctc
1740

tccctttcc tgacctttag tctttcactt ccaattttgt ggaatgatat tttaggaata
1800

cggactttt aaagaagcaa aaaaaaagac tgaatttcct tgcttacttt gcatatacag
1860

ctggatttt tttttttttt ttacagccat ttccccaag gaatgtcttg catattactg
1920

catttggtg tgtttcattc attggaatat ttcttatttt ctacgtgttt gaaaagcctg
1980

aagaaatac aggatttgat aatattttga aggcaggaaa aacccaaatt gtttcttctt
2040

jagagtcac gactaccttc tgggtgtggag aaattgccat tggaaaattt gacaattttg
2100

ttctcactg gtatgtttta aaactgaata aaaggaatag aatttttttt tgataaagga
2160

acaaaaaca attctaaaac ctaactgttt ttaccattga aatttaaatt gtgataatag
2220

ttttaaatg tctagaatgc aactgatagg cttttcttga actgttagtt tttttgaagt
2280

gttttttca tgtttaattt gtatttgtaa aaaaacaaaa agcaaaaaaa ttcccaaac
2340

agataaca accagagcaa aactgttgtg cttctatatt atctttgatt tcagtcttgg
2400

aattgttta aaaaaaaaaat ctagatttgt tttattaggt tcagagtatg tggggaatta
2460

agaatccct ctttcatcac tttgtgtatg tcttttgta acatatttgt tatgccttat
2520

ataaaattg agtctcaaac tggaatgcct ttgaagacag atgcttctat agaggttctt
2580

jacctaaat agttcagcat ttgtattttt attctgggat ctaatcagat tcctaatacat
2640

jcccgtaag aaggaatggt actttaatat tggactttgc tcatgtgctc gtgtccgcat

eolf-seql-S000001.txt

2700

ttttttttt cttaaaatca tagccatatg gtaaattttc tatttttgta tggttctctt
2760

tattgatgg gcatgcagtg ggtgttactt ggaaatggcc aatttttatt aaaatatttc
2820

ggaagaaaa tttaaaaaaa aaaaaaaaaa aaaaa
2855

210> 40

211> 1396

212> DNA

213> Homo sapiens

400> 40

cgtaattaa aaggcggcgg aagaagggtg gaggggtcatg acgcagcagag tttcagtcgt
60

acttttctg ggggcatcgc ggcgtccctt tttttttgcc tttaaagtaa aacgtcggcc.
120

gacgcaccc cccgcgtatt tcggggggcg gaggcggcgg gccacggcgc gaagaggggc
180

gtgctgacg ccggccggtc acgtgggcgt gttgtggggg ggaggggcgc cgccgcgcgg
240

cggttcggg gcggttggga gcgcgcgagc tagcgagcga gaggcagccg cgcccgccgc
300

gccctgct ctgtatgccg ctctctcccg gcgcggccgc cgccgatcac agcagcagga
360

ccaccgccg ccgcggttga tgtggttggg ccggggctga ggaggccgcc aagatgccgc
420

gtccaagtc ccggaagatc gcgatcctgg gctaccggtc tgtggggaaa tcctcattga
480

jattcaatt tgttgaaggc caatttgtgg actcctacga tccaaccata gaaaacactt
540

acaaaagtt gatcacagta aatggacaag aatatcatct tcaacttgta gacacagccg
600

jcaagatga atattctatc tttcctcaga catactccat agatattaat ggctatattc
660

:gtgtattc tgttacatca atcaaaagtt ttgaagtgat taaagttatc catggcaa
720

jttggatat ggtggggaaa gtacaaatac ctattatgtt ggttgggaat aagaaagacc

eolf-seql-S000001.txt

780

gcatatgga aagggatgatc agttatgaag aagggaagc tttggcagaa tcttgggaatg
840

agctttttt ggaatcttct gctaaagaaa atcagactgc tgtggatgtt tttcgaagga
900

aattttgga ggcagaaaaa atggacgggg cagcttcaca aggcaagtct tcatgctcgg
960

gatgtgatt ctgctgcaaa gcctgaggac actgggaata tattctacct gaagaagcaa
1020

ctgcccggt ctccttgaag ataaactatg cttctttttt cttctgttaa cctgaaagat
1080

tcatttggg tcagagctcc cctcccttca gattatgtta actctgagtc tgtccaaatg
1140

gttcacttc cattttcaaa ttttaagcaa tcatattttc aatttatata ttgtatttct
1200

aatattatg accaagaatt ttatcggcat taatttttca gtgtagtttg ttgtttaaaa
1260

aatgtaatc atcaaatga tgcattattgt tacactacta ttaactaggc ttcagtatat
1320

agtgtttat ttcatttgtt taaatgtata ctgttaaata aaatagctgc aaacctcaaa
1380

aaaaaaaa aaaaaa
1396

?10> 41

?11> 2589

?12> DNA

?13> Homo sapiens

!00> 41

!accagga gatttctcca ttttctctt gtctacagtg cggctacaaa tctgggattt
60

!ttattact tctttttttt tcgaactaca ctggggctcc tttttttgtg ctcgactttt
120

!accctttt tccctccctc ctgtgctgct gctttttgat ctcttcgact aaaattttt
180

!tccggagt gtatttaatc ggttctgttc tgtcctctcc accaccccca cccccctccc
240

!cgggtgtgt gtgccgctgc cgctgttgcc gccgccgctg ctgctgctgc tcgccccgctc

eolf-seql-S000001.txt

300

ttacaccaa cccgaggctc tttgtttccc ctcttggate tggtgagttt ctttgttgaa
360

aagccagca tgggtgccca gttctccaag accgcagcga agggagaagc cgccgcggag
420

ggcctgggg aggcggctgt ggcctcgtcg ccttccaaag cgaacggaca ggagaatggc
480

acgtgaagg taaacggcga cgcttcgccc gcggccgccc agtcggggcg caaggaggag
540

gcaggcca acggcagcgc cccggccgccc gacaaggagg agcccgcggc cgccgggagc
600

ggcgggcgt cgccctcctc ggccgagaaa ggtgagccgg ccgcccgcgc tgcccccgag
660

cgggggcca gcccggtaga gaaggaggcc cccgcggaag gcgaggctgc cgagcccggc
720

ggccacgg ccgcggaggg agaggccgcg tcggccgcct cctcgacttc ttcgcccgaag
780

cgaggacg gggccacgcc ctgcgccagc aacgagaccc cgaaaaaaaa aaagaagcgc
840

ttccttca agaagtcttt caagctgagc ggcttctcct tcaagaagaa caagaaggag
900

tgagagaag gcggtgaggc tgaggcgccc gctgccgaag gcggcaagga cgaggccgcc
960

gggcgagc ctgcggccgc cgccgaggcg ggcgcgccct ccggggagca ggcagcggcg
1020

gggcgagg aggcggcagc gggcgaggag gggcgggcgg gtggcgaccc gcaggaggcc
1080

gccccagg aggcgcgtgt cgcgccagag aagccgcccg ccagcgacga gaccaaggcc
1140

cgaggagc ccagcaaggt ggaggagaaa aaggccgagg aggcgggggc cagcgccgcc
1200

ctgcgagg cccctccgc cgccgggccc ggcgcgcccc cgagcagga ggcagcccc
1260

ggaggagc ccgcggccgc cgcagcctcg tcagcctgcg cagccccctc acaggaggcc
1320

gcccaggt gcagtccaga agcccccca gcggaggcgg cagagtaaaa gagcaagctt
1380

eolf-seql-S000001.txt

gtgagata atcgaagaac tttctcccc cgtttgtttg ttggagtggg gccaggtact
1440

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1500

tttttttaa gcaccaaatt ttgttgtttt tttttttctc ccctccccac agatcccatc
1560

aaatcatt ctgttaacca ccattccaac aggtcgagga gagcttaaac accttcttcc
1620

tgcttgtt ttctctttta ttttttattt tttcgcatca gtattaatgt ttttgcatac
1680

tgcatctt tattcaaaag tgtaaacttt ctttgtcaat ctatggacat gcccatatat
1740

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1800

ttgaagtg gtgcataaca ttgccaaaat agtgtgccac tagaaatggg gtaaaggctg
1860

tttttttt tttttttaaa gaaaagttat taccatgtat tttgtgaggc aggtttacaa
1920

ctacaagt cttgagttaa gaaggaaaga ggaaaaaaga aaaaacacca ataccagat
1980

aaaaaaaa aaaaacgac atagtcttag gagttcattt aaaccatagg aacttttcac
2040

atctcatg ttagctgtac cagtcagtga ttaagtagaa ctacaagttg tataggcttt
2100

tgtttatt gctggtttat gaccttaata aagtgttaatt atgtattacc agcaggggtg
2160

ttaactgt gactattgta taaaaacaaa tcttgatatc cagaagcaca tgaagtttgc
2220

ctttccac cctgcccatt tttgtaaaac tgcagtcac ttggaccttt taaaacacaa
2280

tttaaact caaccaagct gtgataagtg gaatggttac tgtttatact gtggtatgtt
2340

tgattaca gcagataatg ctttcttttc cagtcgtctt tgagaataaa ggaaaaaaaa
2400

ttcagatg caatggtttt gtgtagcatc ttgtctatca tgttttgtaa atactggaga
2460

eolf-seql-S000001.txt

gctttgacc aatttgactt agagatggaa tgtaactttg cttacaaaaa ttgctattaa
2520

ctcctgctt aaggtgttct aattttctgt gagcacacta aaagcgaaaa ataaatgtga
2580

taaaatgt
2589

210> 42

211> 1466

212> DNA

213> Homo sapiens

400> 42

gggctgctg ggactcgtcg tcggttggcg actcccggaac gttaggtagt ttgttgggccc
60

ggttctgag gccttgcttc tctttacttt tccactctag gccacgatgc cgcagtacca
120

acctgggag gagttcagcc gcgctgccga gaagctttac ctgctgacc ctatgaaggc
180

cgtgtggtt ctcaaataata ggcattctga tgggaacttg tgtgttaaag taacagatga
240

ctagtttgt ttggtgtata aaacagacca agctcaagat gtaaagaaga ttgagaaatt
300

cacagtcaa ctaatgcgac ttatggtagc caaggaagcc cgcaatgtta ccatggaaac
360

gagtgaatg gtttgaaatg aagactttgt cgtgtactta ggaagtaaata atcttttgaa
420

cagagaaag gttgggacag aaagtacttt atgtaactaa gtgggctgtt cagaagctta
480

aggtcattt tttgtaattt tctttttaat tacttttagag agctagggat gcaaatgttt
540

cagttagaa agcctttatt tacttttgga aattgaacaa gaaatgcata tgtcttagaa
600

ctggagatt atttgatgtt aggtaaaaca tgtaattgtt tctctggcaa atttgatatca
660

aatttgaa aatgagatat taggaaaaac caattcttct taaatttagt tcattcttct
720

aaaagaac attaaatgta accattttgt cagatccatg tattttggag cataaaatgt
780

eolf-seql-S000001.txt

tgctgttgt gaccaataaa tataaaatat ggtaattgga attaactcca caccatagta
840

gcattgtta tacatactgt gtacctaatt atgtatagca gtgtagtctc aattatatct
900

aaagtaatt gtgactaaca agtatgcttt gccttatttc cacatttaaa ctacctgtta
960

tataaggga ttgtagtat cagcttggtg agcaatgact ttgaatctag ttttcagtga
1020

cagaagcag cagttatttg agtgtatgaa tggaatgatg atcactgtgc tataatgtac
1080

gaaaccacc atattacaga aatatttact acatattttc catctgtagt ttctcagaag
1140

gctatggat tagtttgaac tgtcaaatcc ttgcatactt ctgtgacacc cctgcccatt
1200

tctgtcttt aattaaccaa ggtgttaggt gtgactgtca caactgttat gttttccagt
1260

aactagaag cacgatattt gataattata ttgtatttc accacctaaa tgtaatgttg
1320

tcctcaag aatgaaatga aggactaca ttgaaatatg ttttgtataa atttgtcatg
1380

gaacagca ttttagcatg gtaagttccc ttagctatat gaattttggc atgtttcaga
1440

agatcagta aataaaatat tagata
1466

210> 43

211> 1815

212> DNA

213> Homo sapiens

100> 43

gggagatga tccgagccgc gccgccgccg ctgttcctgc tgctgctgct gctgctgctg
60

agtgtcct gggcgtcccg aggcgaggca gcccccgacc aggacgagat ccagcgcctc
120

cgggctgg ccaagcagcc gtctttccgc cagtactccg gctacctcaa aagctccggc
180

caagcacc tccactactg gtttgtggag tcccagaagg atcccgagaa cagccctgtg
240

eolf-seql-S000001.txt

tgctttggc tcaatggggg tcccggctgc agtcactag atgggctcct cacagagcat
300

gccccttcc tgggtccagcc agatgggtgc accctggagt acaacccta ttcttggaat
360

tgattgcca atgtgttata cctggagtcc ccagctgggg tgggcttctc ctactccgat
420

acaagtttt atgcaactaa tgacactgag gtcgcccaga gcaattttga ggcccttcaa
480

atttcttcc gcctctttcc ggagtacaag aacaacaaac ttttctgac cggggagagc
540

atgctggca tctacatccc caccctggcc gtgctgggtca tgcaggatcc cagcatgaac
600

ctcaggggc tggctgtggg caatggactc tcctcctatg agcagaatga caactcctg
660

ctactttg cctactacca tggccttctg gggaacaggc ttggtcttc tctccagacc
720

actgctgct ctcaaaacaa gtgtaacttc tatgacaaca aagacctgga atgcgtgacc
780

atcttcagg aagtggcccg catcgtgggc aactctggcc tcaacatcta caatctctat
840

cccgtgtg ctggaggggt gccagccat ttaggtatg agaaggacac tggtgtggtc
900

aggatttg gcaacatctt cactcgctg ccactcaagc ggatgtggca tcaggcactg
960

gcgctcag gggataaagt gcgcatggac cccccctgca ccaacacaac agctgcttcc
1020

ctacctca acaaccgta cgtgcggaag gccctcaaca tcccgagca gctgccacaa
1080

ggacatgt gcaactttct ggtaaactta cagtaccgcc gtctctaccg aagcatgaac
1140

ccagtatc tgaagctgct tagctcacag aaataccaga tcctattata taatggagat
1200

agacatgg cctgcaattt catgggggat gagtggtttg tggattccct caaccagaag
1260

ggaggtgc agcgccggcc ctggttagtg aagtacgggg acagcgggga gcagattgcc
1320

cttcgtga aggagttctc ccacatcgcc tttctcagca tcaagggcgc cggccacatg

eolf-seql-S000001.txt

1380

ttcccaccg acaagcccct cgctgccttc accatgttct cccgcttct gaacaagcag
1440

catactgat gaccacagca accagctcca cggcctgatg cagccccctcc cagcctctcc
1500

gctaggaga gtcctcttct aagcaaagtg cccctgcagg cgggttctgc cgccaggact
1560

cccccttc cagagccctg tacatcccag actgggcccc gggctctcca tagacagcct
1620

ggggcaagt tagcacttta ttcccgagc agttcctgaa tgggggtggc tggccccctc
1680

ctgcttaaa gaatgccctt tatgatgcac tgattccatc ccaggaaccc aacagagctc
1740

ggacagccc acagggaggt ggtggacgga ctgtaattga tagattgatt atggaattaa
1800

ctgggtaca gcttc
1815

?10> 44

?11> 3315

?12> DNA

?13> Homo sapiens

!00> 44

ttctcgcg ggacaccgac ggggagcggg agccaggagg tattgctgct tcggcgaccg
60

tcggcggca gcggcgccgg cggctgtggc agagtctgtg cctgtggcgg tgacggcggc
120

ggagcaagc gctgccctcg cagagcagcc ttggggctcg cggccgctcg cagcgttgtg
180

ggggcggg ccggacgctg agcggagcag ctgcgccacg ggtggcattg tgtgtcccag
240

tgccggag cgagtcccag aagagaggcg aggctaagcc cagagcgctg ggttgcttca
300

aggggaaga ctcccttccc cctgcttcag gctgctgagc actgagcagc gctcagaatg
360

agccatcg ccaaatatga cttcaaagct actgcagacg acgagctgag cttcaaaagg
420

ggacatcc tcaaggtttt gaacgaagaa tgtgatcaga actggtacaa ggcagagctt

eolf-seql-S000001.txt

480

atggaaaag acggcttcat tccaagaac tacatagaaa tgaaaccaca tccgtggttt
540

ttggcaaaa tccccagagc caaggcagaa gaaatgctta gcaaacagcg gcacgatggg
600

cctttctta tccgagagag tgagagcgct cctggggact tctccctctc tgtcaagttt
660

gaaacgatg tgcagcactt caaggtgctc cgagatggag ccgggaagta cttcctctgg
720

tggtgaagt tcaattcttt gaatgagctg gtggattatc acagatctac atctgtctcc
780

gaaaccagc agatattcct gcgggacata gaacagggtgc cacagcagcc gacatacgtc
840

aggccctct ttgactttga tccccaggag gatggagagc tgggcttccg ccggggagat
900

tatccatg tcatggataa ctcagacccc aactgggtga aaggagcttg ccacgggcag
960

cggcatgt ttccccgcaa ttatgtcacc cccgtgaacc ggaacgtcta agagtcaaga
1020

jcaattatt taaagaaagt gaaaaatgta aaacacatac aaaagaatta aaccacaag
1080

gcctctga cagcagcctg tgagggagtg cagaacacct ggccgggtca ccctgtgacc
1140

ctcacttt ggttggaact ttagggggtg ggagggggcg ttggatttaa aaatgccaaa
1200

ttacctat aaattaagaa gagtttttat taaaatttt cactgctgct cctctttccc
1260

cccttgtc ttttttttca tccttttttc tcttctgtcc atcagtgcac gacgtttaag
1320

cacgtata gtccatagctg acgccaataa taaaaaaca gaaaccaagt gggctggtat
1380

tctctatg caaatgtct gtttttagtg gaatgactga aagaagaaca gctgttcctg
1440

ttcttcgt atatacacac aaaaaggagc gggcagggcc gctcgatgcc ttgctgttt
1500

cttcctcc agaggagggg acttgtagga atctgccttc cagcccagac cccagtgta
1560

eolf-seql-S000001.txt

tttgtccaa gttcacagta gagtagggta gaaggaaagc atgtctctgc ttccatggct
1620

cctgagaaa gcccacctgg gctgggcgcg gtggctcacg cctgtaatcc cagcactttg
1680

jaggccaag gtgggcggat cacaaggta ggagttcgag accaacctag ccaacatggg
1740

aaaccccg ctctactaaa aataagaaat tagccgggtg tggcacgcac ctgtagtccc
1800

jctacttgg gagcctgagg caggagaatc gcttgaacct gggaagtgga ggttgagtga
1860

ccgggaccg tgccattgta ctccagcctg ggtgacagag cgagattccg tctcaaaaaa
1920

aaaaaaaa agcccacctg aaagcctgtc tctttccact ttgttgggcc ttccagtggg
1980

ctatcgagc atgttgtttt ttcatagtgc ctttttcctt atttcaaggg ttgcttctga
2040

cggtgtttt tttttttttt ttaatttggt ttgttttaaa ataagttaaa ggcagtcag
2100

jcttttcag ccaatttgtc tcctactctg tgtaaattt tttccctccg ggcaggggag
2160

aggggtaga gcaaaggaga caaagcagga gtggaagggt aggcgttctc ctgcttgtag
2220

agccagga ggctttaagc tccagcttta agggttgtga gcccttggg ggttcaggga
2280

tgcttgcc caggggtgcag tgtgagtgtg atgggccacc ggggcaagag ggaaggtagc
2340

jccagctc tcccacatcc cactggatct ggcttacagg ggggtcggaa gcctgtcctc
2400

cgctctcg gggttggtgc ccccgcccc tccctatatg caccctgga accagcaagt
2460

cagacaag gagagcggag gaggaagtca tgggaacgca gcctccagtt gtagcaggtt
2520

actattcc tatgctggg tacacagtga gagtactcac ttttacttg tcttgctctt
2580

attggggc atggctttca tcctgtgtcc cctgacctgt ccaggtgagt gtgagggcag
2640

eolf-seql-S000001.txt

actgggaag ctggagtgt gcttgtgcct cccttcccag tgggctgtgt tgactgctgc
2700

ccccacccc taccgatggt cccaggaagc agggagagtt ggggaaggca agattggaaa
2760

acaggaaga ccaaggcctc ggcagaactc tctgtcttct ctccacttct ggtcccctgt
2820

gtgatgtgc ctgtaatctt tttctccacc caaaccctt cccacgacaa aaacaagact
2880

cctccctct ctccgggag ctggtgacag ccttgggcct ttcagtccca aagcggccga
2940

gggagtctc cctccgactc cagatatgaa cagggccag gcctggagcg tttgctgtgc
3000

aggaggcgg cagctcttct gggcagagcc tgtccccgcc ttccttact ctctctcatc
3060

tgcttctct tttctcgcga gatgataaaa ggaatctggc attctacacc tggaccattt
3120

attgtttta ttttggaatt ggtgtatatc atgaagcctt gctgaactaa gttttgtgtg
3180

atatattta aaaaaaaaaat cagtgtttta ataaagacct atgtacttaa tcctttaact
3240

cgcgatag catttggtag gtagtgatta actgtgaata ataaatacac aatgaattct
3300

aaaaaaaaa aaaaa
3315

210> 45

211> 2225

212> DNA

213> Homo sapiens

100> 45

acatggcg cgcgagctgc gggcgctgct gctgtggggc cgccgcctgc ggcctttgct
60

gggcgccg gcgctggcgg ccgtgccggg aggaaaacca attctgtgtc ctggaggac
120

icagcccag ttgggccccca ggcgaaaccc agcctggagc ttgcaggcag gacgactgtt
180

gcacgcag accgccgagg acaaggagga acccctgcac tcgattatca gcagcacaga
240

eolf-seql-S000001.txt

agcgtgcag ggttccactt ccaaacatga gttccaggcc gagacaaaga agcttttggg
300

attgttgcc cggtcctgt actcagaaaa agaggtgttt atacgggagc tgatctccaa
360

gccagcgat gccttgga aaactgcgtca caaactggtg tctgacggcc aagcactgcc
420

gaaatggag attcattgc agaccaatgc cgagaaaggc accatcacca tccaggatac
480

ggtatcggg atgacacagg aagagctggt gtccaacctg gggacgattg ccagatcggg
540

tcaaaggcc ttcttggatg ctctgcagaa ccaggctgag gccagcagca agatcatcgg
600

cagtttggg gtgggtttct actcagcttt catggtggct gacagagtgg aggtctattc
660

cgctcggca gccccgggga gcctgggtta ccagtggctt tcagatggtt ctggagtgtt
720

jaaatcgcc gaagcttcgg gagttagaac cgggacaaaa atcatcatcc acctgaaatc
780

jactgcaag gagttttcca gcgaggcccc ggtgcgagat gtggtaacga agtacagcaa
840

itcgtcagc ttccccttgt acttgaatgg aaggcggatg aacaccttgc aggccatctg
900

atgatggac cccaaggatg tcggtgagtg gcaacatgag gagttctacc gctacgtcgc
960

jaggctcac gacaagcccc gctacaccct gcactataag acggacgcac cgctcaacat
1020

jgcagcatc ttctacgtgc ccgacatgaa accgtccatg tttgatgtga gccgggagct
1080

jgctccagc gttgcactgt acagccgcaa agtcctcatc cagaccaagg ccacggacat
1140

itgcccag tggctgcgct tcatccgagg tgtggtggac agtgaggaca ttcccctgaa
1200

itcagccgg gagctgctgc aggagagcgc actcatcagg aaactccggg acgttttaca
1260

jagaggctg atcaaattct tcattgacca gagtaaaaaa gatgctgaga agtatgcaaa
1320

tttttgaa gattacggcc tgttcatgcg ggagggcatt gtgaccgcca ccgagcagga

eolf-seql-S000001.txt

1380

gtcaaggag gacatagcaa agctgctgcg ctacgagtcc tcggcgctgc cctccgggca
1440

taaccagc ctctcagaat acgccagccg catgceggcc ggcacccgca acatctacta
1500

gtgtgcgc cccaaccgtc acctggcaga gcactcacc tactatgagg ccatgaagaa
1560

aaagacaca gaggttctct tctgctttga gcagtttgat gagctcacc tgctgcacct
1620

gtgagttt gacaagaaga agctgatctc tgtggagacg gacatagtcg tggatcacta
1680

aggaggag aagtttgagg acaggtcccc agccgccgag tgcctatcag agaaggagac
1740

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1800

ccctccga ctggacaccc accctgccat ggtcacctg ctggagatgg gggctgccc
1860

acttcctg cgcattgcgc agctggccaa gaccaggag gagcgcgcac agctcctgca
1920

ccacgctg gagatcaacc ccaggcacgc gctcatcaag aagctgaatc agctgcgcgc
1980

gcgagcct ggcctggctc agctgctggt ggatcagata tacgagaacg ccatgattgc
2040

ctggactt gttgacgacc ctagggccat ggtgggccgc ttgaatgagc tgcttgtcaa
2100

ccctggag cgacactgac agccaggggg ccagaaggac tgacaccaca gatgacagcc
2160

acctcctt gagctttatt tacctaaatt taaaggtatt tcttaacccg aaaaaaaaaa
2220

.aaa
2225

10> 46
11> 1501
12> DNA
13> Homo sapiens

00> 46
agaggaca cgaccaagat ggcggcggtg tctggcttgg tgcggagacc ccttcgggag

eolf-seql-S000001.txt

60

tctccgggc tgctgaagag gcgctttcac tggaccgcgc cggctgcgct gcaggtgaca
120

ttcgtgatg ctataaatca gggatatggat gaggagctgg aaagagatga gaaggtattt
180

tgcttgag aagaagttgc ccagtatgat ggggcataca aggttagtcg agggctgtgg
240

agaaatatg gagacaagag gattattgac actcccatat cagagatggg ctttgctgga
300

ttgctgtag gtgcagctat ggctgggttg cggcccattt gtgaatttat gaccttcaat
360

ctccatgc aagccattga ccaggttata aactcagctg ccaagaccta ctacatgtct
420

gtggccttc agcctgtgcc tatagtcttc aggggaccca atggtgcctc agcaggtgta
480

tgcccagc actcacagtg ctttgctgcc tggatatggc actgcccagg cttaaagggtg
540

tcagtcctt ggaattcaga ggatgctaaa ggacttatta aatcagccat tcgggataac
600

atccagtgg tggtgctaga gaatgaattg atgtatgggg ttccctttga atttctcccg
660

agctcagt caaaagattt tctgattcct attggaaaag caaaataga aaggcaagga
720

acatataa ctgtggtttc ccattcaaga cctgtgggcc actgcttaga agctgcagca
780

tgctatcta aagaaggagt tgaatgtgag gtgataaata tgcgtaccat tagaccaatg
840

tcatggaaa ccatagaagc cagtgtcatg aagacaaatc atcttgtaac tgtggaagga
900

gtggccac agtttgagat aggagctgaa atctgtgcca ggatcatgga aggtcctgcg
960

caatttcc tggatgctcc tgctgttcgt gtcactgggtg ctgatgtccc tatgccttat
1020

aaagattc tagaggacaa ctctatacct caggtcaaag acatcatatt tgcaataaag
1080

aacattaa atatttagtt tggacttgaa tatcaagtcg ttgaaattta tttgaaatac
1140

eolf-seql-S000001.txt

tgctggcac tgcacctgga tttgtactgc aagacctgac tattcataaa ggaaaacgat
1200

ctaaagca acagcaggtta tttttgtaca gggaagttta aatgtgtttg tgtatggaaa
1260

ctctccact ctctcccct agatgccatg ctctcttttg tctgttacgg ttgccatgtt
1320

ttgaataa caaattatat cacattttat cctctctcac cacaaggaca aagtatggat
1380

ggcagagt cctgatgaaa gatgtatcca aacaagataa cttatatgta taaaattaaa
1440

atataata cacatttact gttagtttgt tttgataagg aataaaggaa tttctaacat
1500

1501

!10> 47

!11> 699

!12> DNA

!13> Homo sapiens

!00> 47

ttccggtgt ggtcgacggg tcctccaaga gtttggggcg cggaccggag taccttgcgt
60

agttatgt cggcgctcggg agtgtctgtc atttcgcggg tcttagaaga gtacttgagc
120

cactccgc agcgtctgaa gttgctggac gcgtacctgc tgtatatact gctgaccggg
180

gctgcagt tcggttactg tctcctcgtg gggaccttcc ctttcaactc ttttctctcg
240

cttcatct cttgtgtggg gagtttcatc ctagcggttt gcctgagaat acagatcaac
300

acagaaca aagcggattt ccaaggcatc tccccagagc gagcctttgc tgattttctc
360

tgccagca ccatactgca ccttggtgtc atgaactttg ttggctgaat cattctcatt
420

cttaattg aggagtagga gactaaaaga atgttcactc tttgaatttc ctggataaga
480

tctggaga tggcagctta ttggacacat ggattttctt cagatttgac acttactgct
540

eolf-seql-S000001.txt

gctctgctt tttatgacag gagaaaagcc cagagttcac tgtgtgtcag aacaactttc
600

aacaaacat ttattaatcc agcctctgcc tttcattaaa tgtaaccttt tgctttccaa
660

ttaaagaac tccatgccac tcctcaaaaa aaaaaaaaaa
699

210> 48
211> 829
212> DNA
213> Homo sapiens

400> 48
ggggagtga aagcgaaagc ccgggagact agccgggaga ccagagatct agcgactgaa
60

cagcatggc caagccgtgt ggggtgcgcc tgagcgggga agcccgcaaa caggtggagg
120

ttcagaca gaatcttttc caggaggctg aggaattcct ctacagattc ttgccacaga
180

aatcatata cctgaatcag ctcttgcaag aggactccct caatgtggct gacttgactt
240

ctccgggc cccactggac atcccatcc cagaccctcc acccaaggat gatgagatgg
300

acagataa gcaggagaag aaagaagtcc ataagtgtgg atttctccct gggaatgaga
360

agtctgtc cctgcttgcc ctggttaagc cagaagtctg gactctcaaa gagaaatgca
420

ctggtgat tacatggatc caacacctga tccccaagat tgaagatgga aatgattttg
480

gtagcaat ccaggagaag gtgctggaga gggatgaatgc cgtcaagacc aaagtggaag
540

ttccagac aaccatttcc aagtacttct cagaacgtgg ggatgctgtg gccaaaggcct
600

aaaggagac tcatgtaatg gattaccggg ccttggtgca tgagcgagat gaggcagcct
660

ggggagct cagggccatg gtgctggacc tgagggcctt ctatgctgag ctttatcata
720

atcagcag caacctggag aaaattgtca acccaaaggg tgaagaaaag ccatctatgt
780

eolf-seql-S000001.txt

gtgaacccg ggactagaag gaaaataaat gatctatatg ttgtgtgga
829

?10> 49

?11> 965

?12> DNA

?13> Homo sapiens

!00> 49

agcttgtcc tctatgactt acccagaagg caacgcttct ctttctgggc aaaatggctg
60

aaagcaggc cgtttcagca tcaggcaagt ggctggatgg ttttcgaaaa tggattaca
120

agctgcagg attcaataaa ctgggggttaa tgcgagatga tacaatatac gaggatgaag
180

gtaaaaga agccataaga agacttcctg agaaccttta taatgacagg atgtttcgca
240

aaagagggc actggacctg aacttgaagc atcagatctt gcctaaagag cagtggacca
300

tatgaaga ggaaaatttc taccttgaac cgtatctgaa agagggttatt cgggaaagaa
360

gaaagaga agaatgggca aagaagtaat catgtagttg aagtctgtgg atgcagctgt
420

tgaagatg gttaaacttg aaacaaacaa ttttaagaat tatttggctc gaagatgttt
480

ctttaaat aaatgtctat tgtaatggct ggagtttttg aattccaaac cttatactga
540

aactactg aatcccttta ctgttaaatt tttttccaaa cttcaagat atatttagtt
600

gtttaact gctacttgga gctcagaagc cactttatca gttttcctca ctggttggat
660

cctatcag tttatggaag gatataactt ccgtaagtta catccttatg gaagctactg
720

taaaagaa gggggtatgc accccctagt ttgccaagat tgagaaatag cctcttcact
780

tatgcaaa cagatttgat tttgcatcct atcatttaaa aagaaattat gtctgcaccc
840

acataggc atacttaagt aatatacata ctctgtgtct aacatgtata ctagaaaaca
900

eolf-seql-S000001.txt

aaagatggtt agaaaaataa aagtataaag acaaatcaaa aaaaaaaaaa aaaaaaaaaa
960

aaaa
965

210> 50
211> 653
212> DNA
213> Homo sapiens

100> 50
jgacgaggg cgcgtaggtg aggaaggtca ggtctaggaa ctctaactcc ttgccactca
60

jaaatgtcc tccctttcag aatatgcctt ccgcatgtct cgtctcagtg cccggctatt
120

jgtgaagtc accaggccta ctaattccaa gtctatgaaa gtggtgaaac tgtttagtga
180

ctgcccttg gccagaaga aggagactta tgattggat ccaatcacc acacttacgc
240

jaactcatg cagacgctcc gatttcttgg actctacaga gatgagcatc aggattttat
300

jatgagcaa aaacgactaa agaagcttcg tggaaaggag aaaccaaaga aaggagaagg
360

aaaagagca gcaaaaagga aatagtgttg gtccctcaag agggagactt tcttcctcag
420

jgcggagag aagaaagtgc atttattgtc tttccacata ttggaggaat gtcattctcc
480

aatgaagt ttatttggag gaacacagtc atctccttgg tgaaatctaa tccggttaca
540

gtggctgg tttcttgaac acattctaac tgtgcaaaat tatcttggcc ttggccgtgt
600

ttgtgaggt ttacctgatt ctctaataa ataaatacct aagttattgt ttg
653

10> 51
11> 1610
12> DNA
13> Homo sapiens

00> 51
gcgccagt cgccatgag gtccctacc ggcttattcc tgtgccgat cttcatcggc

eolf-seql-S000001.txt

60

aggggcca ctgagacgtt tctgcctccc tctttcttcc tccgctcttt ctcttccttc
120

ggttagtt tgcctggagc ttgaaaggag aaagcacggg gtcgccccaa accccttctg
180

ctctgccca tcacaagtgc cactaccgcc atgggcctca ctatctcctc cctcttctcc
240

gactatttg gcaagaagca gatgcgcatt ttgatggttg gattggatgc tgctggcaag
300

caaccattc tgtataaact gaagttaggg gagatagtca ccaccattcc taccattggt
360

taatgtgg aaacagtaga atataagaac atttgtttca cagtatggga tgttggtggt
420

agatagaa ttaggcctct ctggaagcat tacttccaga ataccaggg tcttattttt
480

ggtagata gcaacgatcg tgaaagaatt caggaagtag cagatgagct gcagaaaatg
540

ctctggtag atgaattgag agatgcagtg ctgctacttt ttgcaaacaac acaggatttg
600

aaatgcta tggccatcag tgaaatgaca gataaactag ggcttcagtc tcttcgtaac
660

aacatggt atgttcaagc cacttgtgca acacaaggaa ctggtctgta tgaaggactt
720

ctggctgt caaatgagct ttcaaacgt taaatgaaat tggatatcta accaaggaca
780

tttgataa aattggtcta ggcttggttac aacaaaatta gtttgatatct tggttattaa
840

agtatctg ggactggttt gggcagaata ttaaacttat tttgttgcca attattgttt
900

cgagtata atgttgctat ttagcaatgt gcttggtttt aaagaaattc tccttgggaa
960

aagtatcc tcttttaatt ttacttccca taagcgtaaa tgcttggaac tagctcttgt
1020

acctttaa ataaattggt tgagtgtttt tgagccccag acaaataatg ttttaaagtt
1080

cccttgct actttactga tacctttatc attcctgaga cagtttgcta atttaaaaat
1140

eolf-seql-S000001.txt

tagcattcc atttgtatatt atttctctcc cttgccaaaa agattttcta atactgcttg
1200

accagccag agaaagatcc aaaacactac tcagctctct tgcactgagg aaatttttcc
1260

cctacattg actcctggcc tacatcagcc aaacttaacc ttggtggggt ttggatttga
1320

agccaatta gttctgtgct ggttgcaaag aattgatatt tagatggttt ttaataactca
1380

cagattgtc ttcccatatt gtgtcttttt tatgttgcac gttgcttttg ttatcagcct
1440

attttttgc tcagtatatg atagttctgc tgatgttttg tttattgggc agacatatct
1500

cattaagag tttttggaaa actcatcaaa ttcgatgaat acattttctt cataacccat
1560

cgggaattat tcctaataaa atgataaaat acgtaaaaaa aaaggaattc
1610

210> 52

211> 4221

212> DNA

213> Homo sapiens

100> 52

agcggcagt ggagttcgct gcgcgctggt gggggccacc tgtcttttcg cttgtgtccc
60

ctttctagt gtgcgctcg agtcccgacg ggccgctcca agcctcgaca tgtcgtacaa
120

cacgtggta acggcccaga agcccaccgc cgtgaacggc tgcgtgaccg gacactttac
180

cggccgaa gacttaaacc tgttgattgc caaaaacacg agattagaga tctatgtggt
240

accgccgag gggcttcggc ccgtcaaaga ggtgggcatg tatgggaaga ttgcggtcac
300

agcttttc aggcccaagg gggagagcaa ggacctgctg tttatcttga cagcgaagta
360

atgcctgc atcctggagt ataaacagag tggcgagagc attgacatca ttacgcgagc
420

atggcaat gtccaggacc gcattggccg cccctcagag accggcatta ttggcatcat
480

eolf-seql-S000001.txt

jaccctgag tgccggatga ttggcctgcg tctctatgat ggccttttca aggttattcc
540

ctagatcgc gataataaag aactcaaggc cttcaacatc cgcctggagg agctgcatgt
600

attgatgtc aagttcctat atggttgcc agcacctact atttgctttg tctaccagga
660

ctcagggg cggcacgtaa aaacctatga ggtgtctctc cgagaaaagg aattcaataa
720

jgcccttgg aaacaggaaa atgtcgaagc tgaagcttcc atggtgatcg cagtcccaga
780

ccctttggg ggggccatca tcattggaca ggagtcaatc acctatcaca atggtgacaa
840

acctggct attgccctc ctatcatcaa gcaaagcacg attgtgtgcc acaatcgagt
900

jaccctaatt ggctcaagat acctgctggg agacatggaa ggccggctct tcatgctgct
960

ttggagaag gaggaacaga tggatggcac cgtcactctc aaggatctcc gtgtagaact
1020

ttggagag acctctattg ctgagtgctt gacatacctt gataatgggtg ttgtgtttgt
1080

jggtctcgc ctgggtgact cccagcttgt gaagctcaac gttgacagta atgaacaagg
1140

ccctatgta gtggccatgg aaacctttac caacttagga cccattgtcg atatgtgcgt
1200

gtggacctg gagaggcagg ggcaggggca gctggctact tgctctgggg ctttcaagga
1260

jgttctttg cggatcatcc ggaatggaat tggaatccac gagcatgcca gcattgactt
1320

ccaggcatc aaaggattat ggccactgcg gtctgaccct aatcgtgaga cttatgacac
1380

tggtgctc tcttttgtgg gccagacaag agttctcatg ttaaattggag aggaggtaga
1440

aaaccgaa ctgatgggtt tcgtggatga tcagcagact ttcttctgtg gcaacgtggc
1500

atcagcag cttatccaga tcacttcagc atcggtgagg ttggtctctc aagaacccaa
1560

eolf-seql-S000001.txt

gctctggtc agtgaatgga aggagcctca ggccaagaac atcagtgtgg cctcctgcaa
1620

agcagccag gtggtggtgg ctgtaggcag ggccctctac tatctgcaga tccatcctca
1680

jagctccgg cagatcagcc acacagagat ggaacatgaa gtggcttgct tggacatcac
1740

ccattagga gacagcaatg gactgtcccc tctttgtgcc attggcctct ggacggacat
1800

cgggtcgt atcttgaagt tgccctcttt tgaactactg cacaaggaga tgctgggtgg
1860

jagatcatt cctcgctcca tctgatgac cacctttgag agtagccatt acctcctttg
1920

jccctggga gatggagcgc ttttctactt tgggctcaac attgagacag gtctgttgag
1980

jaccgtaag aaggtgactt tgggcaccca gcccacgta ttgaggactt ttcgttctct
2040

ctaccacc aacgtctttg cttgttctga ccgccccact gtcattctata gcagcaacca
2100

aaattggtc ttctcaaagc tcaacctcaa ggaagtgaac tacatgtgtc cctcaattc
2160

jatggctat cctgacagcc tggcgctggc caacaatagc accctcacca ttggcaccat
2220

jatgagatc cagaagctgc acattcgcac agttcccctc tatgagtctc caaggaagat
2280

gctaccag gaagtgtccc agtgtttcgg ggtcctctcc agccgcattg aagtccaaga
2340

cgagtggg ggcacgacag ccttgaggcc cagcgetagc acccaggctc tgtccagcag
2400

taagctcc agcaagctgt tctccagcag cactgctcct catgagacct cctttggaga
2460

aggtggag gtgcataacc tacttatcat tgaccaaacac acctttgaag tgcttcatgc
2520

accagttt ctgcagaatg aatatgccct cagtctgggt tcttgcaagc tgggcaaaga
2580

ccaacact tacttcattg tgggcacagc aatggtgtat cctgaagagg cagagcccaa
2640

agggtcgc attgtggtct ttcagtattc ggatggaaaa ctacagactg tggctgaaaa

eolf-seql-S000001.txt

2700

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2760

atagcacg gtgcggctct atgagtggac aacagagaag gacgtgcgca ctgagtgcaa
2820

actacaac aacatcatgg ccctctacct gaagaccaag ggcgacttca tcttggtggg
2880

accttatg cgctcagtgc tgctgcttgc ctacaagccc atggaaggaa actttgaaga
2940

attgctcga gactttaatc ccaactggat gagtgctgtg gaaatcttgg atgatgacaa
3000

ttctgggg gctgaaaatg cctttaactt gtttgtgtgt caaaaggata gcgctgccac
3060

ctgacgag gagcggcagc acctccagga ggttggctct ttccacctgg gcgagtttgt
3120

atgtcttt tgccacggct ctctggtaat gcagaatctg ggtgagactt ccacccccac
3180

aaaggctcg gtgctcttcg gcacgggtcaa cggcatgata gggctggtga cctcactgtc
3240

agagctgg tacaacctcc tgctggacat gcagaatcga ctcaataaag tcatcaaaag
3300

ttggggaag atcgagcact ccttctggag atcctttcac accgagcgga agacagaacc
3360

ccacaggt ttcacgacg gtgacttgat tgagagtttc ctggatatta gccgccccaa
3420

tgaggag gtggtggcaa acctacagta tgacgatggc agcggtatga agcgagaggc
3480

ctgcagac gacctcatca aggttgtgga ggagctaact cggatccatt agccaagggc
3540

ggggcccc ttgctgacc ctcccaaag gctttgcctt gctgcctcc cctcctctc
3600

ccatcgtc ttcttgcca tgggaggcct ttccctaagc cagctgcccc cagagccaca
3660

tccctat gtggaagtgg ggcgggcttc atagagactt gggaatgagc tgaaggtgaa
3720

attttctc cctggatttt taccagtctc acatgattcc agccatcacc ttagaccacc
3780

eolf-seql-S000001.txt

agccttgat tgggtgttgcc agttgtcctc cttccgggga aggattttgc agttccttgg
3840

cgaaaggaa gctgtgctg tgtgtgtgtg tatgtgtgtg tgtgtatgtg tatctcacac
3900

catgcattg tcctcttttt atttagattg gcagtgtagg gagttgtggg tagtggggaa
3960

agggttagg agggtttcat tgtctgtgaa gtgagacctt ccttttactt ttcttctatt
4020

ctctgaga gcacaggcc tagaggcctg actgccaaagc catgggtagc ctgggtgtaa
4080

acctggaga tgggtggatga tccccacgcc acagcccttt tgtctctgca aactgccttc
4140

cggaagaa agaagggtggg aggatgtgaa ttgttagttt ctgagtttta ccaaataaag
4200

agaatataa gaagaaaaaa a
4221

:10> 53

:11> 1470

:12> DNA

:13> Homo sapiens

:00> 53

agcccgcca gcgaggctgg ggatgggggc gccgctgctc tctcccggt ggggagccgg
60

ctgccggc cggcgctggt ggatgctgct ggcccccctg ctgccggcgc tgetgctggt
120

ggcccgcg ggggccctgg tggaggggct ctactgcgc acgcgggact gctacgaggt
180

tgggcgtg agccgctcgg cgggcaaggc ggagatcgcg cgggcctacc gccagctggc
240

ggcgctac caccctgacc gctaccggcc ccagcccga gacgagggcc ccgggcggac
300

cgcagagc gccgaggagg ctttctgct ggtggcaacc gcctacgaga cactcaaggt
360

ctcaggca gctgcagagc ttcaacagta ctgtatgcag aatgcctgca aggatgccct
420

tgggtgggt gttccagctg gaagtaacct cttccgggag cctagatcct gtgctttact
480

eolf-seql-S000001.txt

gaagactc gagagaagtt tgctgaggaa tgccttcaag cacaaagtga tgaatgactg
540
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600
ggcctggtc ctatagccaa aatcacagat attcatgagt ttctacttga gtgagaaaaac
660
gggtgaagg aatagaattt taaatagtaa taactgcttg ttttttttgt gcaagtactt
720
atacataa gataaacaaa aaccttacca ccaaacatac caaaatgcac ctctttcata
780
gtgagttac taagatttct atacctggaa tatcatgtat gtttcattta ctggatgttt
840
atttttagg aaggaaaata gttttgttta tttaaacaac tgaatactta taaactgttg
900
cctggaag ttattttatt cataaaaaat ttgttctttt gtcatgaatt tataattcct
960
atgaagac cagaaagtac aaattgctgg gaggaagaat aggctttatt aatcaactga
1020
gtcttgatt tttctaaatg ggaagattgc tttattttta acactaatta tgggagcaga
1080
cttagcaa acttcttttg aaaagttaat gttatgatgt gcattaggct gcccatcgt
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1200
tgtactta aagaaataca gaatttcata tatttaaaaa tgtttaaaat gtgaccacaca
1260
acattgta aatgattaaa aactaacatg aaaatattac aacctaaaag aattcttaac
1320
cacaagtg ttttacttcg acgatgtgcc tttgatttaa tttgggacac ttttttagaa
1380
atacatta ttctgttttg caacggtctt tgaagagctt ggaaataaaa tttctgctta
1440
taatcaaa aaaaaaaaaa aaaaaaaaaa
1470

10> 54
11> 3321

eolf-seql-S000001.txt

212> DNA

213> Homo sapiens

400> 54

gtgagtct ataactcgga gccgttgggt cggttcctgc tattccggcg cctccactcc
60

cccccgcg ggtctgctct gtgtgccatg gacggcattg tcccagatat agccgttggg
120

aaagcggg gatctgacga gcttttctct acttgtgtca ctaacggacc gtttatcatg
180

gcagcaact cggcttctgc agcaaacgga aatgacagca agaagttcaa aggtgacagc
240

gaagtgcag gcgtcccctc tagagtgatc cacatccgga agtccccat cgacgtcacg
300

agggggaag tcattctcct ggggctgccc ttgggaagg tcaccaacct cctgatgctg
360

aggggaaaa accaggcctt catcgagatg aacacggagg aggctgcaa caccatggtg
420

actactaca cctcggtgac ccctgtgctg cgcgggccagc ccatctacat ccagttctcc
480

accacaagg agctgaagac cgacagctct cccaaccagg cgcgggccca ggcggccctg
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600

icgcaggga tggcgatggc cgggcagagc cccgtgctca ggatcatcgt ggagaacctc
660

ctaccctg tgaccctgga tgtgctgcac cagattttct ccaagttcgg cacagtgttg
720

gatcatca ccttcaccaa gaacaaccag ttccaggccc tgctgcagta tgcggacccc
780

gagcgccc agcacgcaa gctgtcgtg gacgggcaga acatctacaa cgcttctgctg
840

gctgcgca tcgacttttc caagctcacc agcctcaacg tcaagtacaa caatgacaag
900

ccgtgact acacacgccc agacctgcct tccggggaca gccagccctc gctggaccag
960

catggccg cggccttcgg tgcacctggt ataatctcag cctctccgta tgcaggagct
1020

eolf-seql-S000001.txt

gtttccctc ccacctttgc cattcctcaa gctgcaggcc tttccgttcc gaacgtccac
1080

gcgccttg ccccccctggc catccccctcg gcggcggcgg cagctgcggc ggcaggtcgg
1140

cgcgccatcc cgggcctggc gggggcagga aattctgtat tgctggtcag caacctcaac
1200

cagagagag tcacacccca aagcctcttt attcttttcg gcgtctacgg tgacgtgcag
1260

gcgtgaaga tcctgttcaa taagaaggag aacgccttag tgcagatggc ggacggcaac
1320

aggcccagc tggccatgag ccacctgaac gggcacaagc tgcacgggaa gcccatccgc
1380

ccacgtctc cgaagcacca gaacgtgcag ctgccccgcg agggccagga ggaccagggc
1440

cgaccaagg actacggcaa ctcaccctg caccgcttca agaagccggg ctccaagaac
1500

ccagaaca tattcccgc ctcggccacg ctgcacctct ccaacatccc gccctcagtc
1560

cgcaggagg atctcaaggt cctgttttcc agcaatgggg gcgtcgtcaa aggattcaag
1620

ccttccaga aggaccgcaa gatggcactg atccagatgg gctccgtgga ggaggcggtc
1680

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1740

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1800

catcattc cagagaaaag ccactttaaa aacagctgaa gtgaccttag cagaccagag
1860

tttatttt tttaaagaga aatcagttta cctgttttta aaaaaattaa atctagttca
1920

ttgctcac cctgcggtga caggacagc tcaggctctt ggtgactgtg gcagcgggag
1980

cccggccc tccacacccg gggccagacc ctcggggcca tgccttggtg gggcctgtgt
2040

ggcgtggg gcctgcaggt gggcgccccg accacgactt ggcttccttg tgccttaaaa
2100

cctgcctt cctgcagcca cacaccacc cggggtgtcc tggggacca aggggtggg

eolf-seql-S000001.txt

2160

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2220

jcgggcgcc gcggctgcga caccccaacc ccagccctct aatcaagtca cgtgattctc
2280

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2340

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2400

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2460

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2520

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2580

aggaccag ttccagaga gcaggcgggg ccgcccagtg ggtcaggcac agggagcccc
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2700

gcctccgg ttgccttaca ccacgccttc acctgcagtc gcctagaaaa cttgctctca
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2880

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2940

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3000

gtttttta tggtgacaca aatgtatatt ttgctaacag caattccagg ctcaagtattg
3060

accgcgga gccacagggg accccacgca cattccgttg ccttaccgga tggcttggtga
3120

cggagaga accgattaaa accgtttgag aaactcctcc cttgtctagc cctgtgttcg
3180

gtggacgc tgtagaggca gggtggccag tctgtacctg gacttcgaat aaatcttctg
3240

eolf-seql-S000001.txt

atcctcgct ccgttccgcc ttaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa
3300

aaaaaaaaa aaaaaaaaaa a
3321

?10> 55
?11> 2181
?12> DNA
?13> Homo sapiens

100> 55
jaagccgag cggcgcagag gacgccaggg cgcgcgccgc agccaccac cctccggacc
60

ggcagctg ctgaccgcc atcgccatgg cccgcgggaa agccaaggag gagggcagct
120

jaagaaatt catctggaac tcagagaaga aggagtttct gggcaggacc ggtggcagtt
180

tttaagat ccttctattc tacgtaatat tttatggctg cctggctggc atcttcatcg
240

accatcca agtgatgctg ctcaccatca gtgaatttaa gccacatat caggaccgag
300

gccccgcc aggattaaca cagattcctc agatccagaa gactgaaatt tcctttcgtc
360

aatgatcc caagagctat gaggcataat tactgaacat agttagggtc ctggaaaagt
420

aaagattc agcccagagg gatgacatga tttttgaaga ttgtggcgat gtgcccagtg
480

ccgaaaga acgaggagac tttaatcatg aacgaggaga gcgaaaggtc tgcagattca
540

cttgaatg gctgggaaat tgctctggat taaatgatga aacttatggc tacaaagagg
600

aaaccgtg cattattata aagctcaacc gagttctagg cttcaaacct aagcctccca
660

aatgagtc cttggagact taccagtgga tgaagtataa cccaaatgtc cttcccggtc
720

tgactgg caagcgagat gaagataagg ataaagttgg aaatgtggag tattttggac
780

ggcaactc ccctgggttt cctctgcagt attatccgta ctatggcaaa ctctgcagc
840

eolf-seql-S000001.txt

aaataacct gcagcccctg ctggccgtac agttcaccaa tcttaccatg gacactgaaa
900

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960

gggacgttt tgatgtaaaa attgaagtta agagctgatc acaagcacia atctttccca
1020

agccattt aataagttaa aaaaagatac aaaaacaaaa acctactagt cttgaacaaa
1080

gtcatacg tatgggacct acacttaatc tatatgcttt acactagctt tctgcattta
1140

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1200

acaaaaaga aaaagaaaaa ttgagccttg ggacgtgccc atttttactg taaattatga
1260

ccgtaact gacttgtagt aagcagtgtt tctggcccct aagtattgct gccttgtgta
1320

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1380

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1440

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1500

aggtaatg gcccatcgat gagcattttt aacatactcc atagtctttt cctgtggtgt
1560

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1620

cctttaaa ttttaagtga cactacagaa aaacacaaaa aggtgatggg ttgtgttatg
1680

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1740

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1800

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1860

tatgaatg ttttaacat tttcatgggtg gaagaatttt atatttatgc agttgtacaa
1920

eolf-seql-S000001.txt

ttattttt ttctgcaaga aaaagtgtaa tgtatgaaat aaaccaaagt cacttgtttg
1980

aaataaatc tttattttga actttataaa aagcaatgca gtaccccata gactgggtgtt
2040

aatgtgtgc tacagtgcaa aatccatggt ctaacatatg taataattgc caggagtaca
2100

tgctcttgt tgatcttgta ttcagtcagg ttaaaacaac ggacaataaa agaatgaaca
2160

aaaaaaaaa a
2181

?10> 56

?11> 1330

?12> DNA

?13> Homo sapiens

!00> 56

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60

ggcgcacc tggcgcgggc gaaccccttc aacacgccac atctgcagct ggtgcacgat
120

gtctcgggg acctccgcag cagctcccca gggcccacgg gccagccccg ccgccctcgc
180

acctggcag ccgccgccgt ggaagagtac agttgtgaat ttggctccgc gaagtattat
240

actgtgtg gctttggtgg ggtcttaagt tgtggtctga cacacactgc tgtgggtccc
300

ggatttag tgaaatgccg tatgcaggtg gacccccaaa agtacaaggg catatttaac
360

tattctcag ttacacttaa agaggatggt gttcgtgggt tggctaaagg atgggctccg
420

tttccttg gctactccat gcagggactc tgcaagtttg gcttttatga agtctttaaa
480

cttggtata gcaatatgct tggagaggag aatacttata tctggcgcac atcactatat
540

ggctgcct ctgccagtgc tgaattcttt gctgacattg ccctgggtcc tatggaagct
600

taagggtc gaattcaaac ccagccaggt tatgccaaca ctttgaggga tgcagctccc
660

eolf-seql-S000001.txt

aatgtata aggaagaagg cctaaaagca ttctacaagg gggttgctcc tctctggatg
720

acagatac catacaccat gatgaagttc gcctgctttg aacgtactgt tgaagcactg
780

caagtttg tggttcctaa gccccgcagt gaatgttcaa agccagagca gctggttgta
840

atttgtag caggttacat agctggagtc ttttgtgcaa ttgtttctca ccctgctgat
900

gtgtggtat ctgtgttgaa taaagaaaaa ggtagcagtg cttctctggt cctcaagaga
960

tggattta aaggtgtatg gaagggactg ttgcccgtat tcatcatgat tggtagcctg
1020

tgactac agtggtttat ctatgactcc gtgaagggtc acttcagact tcctcgccct
1080

cccacctg agatgccaga gtctctgaag aaaaagcttg ggttaactca gtagttagat
1140

aagcaaat gtggactgaa tctgcttggt gatcagtgtt tgaagaaagt gcaaaaggaa
1200

tttatata ttgacagtg taggaaattg tctattcctg atataattac tgtagtactc
1260

gcttaagg caagagtttc agatttactg ttgaaataaa cccaactggt catgaaaaaa
1320

aaaaaaaa
1330

10> 57
11> 3214
12> DNA
13> Homo sapiens

00> 57
gtgggagg agccagcggc cggggaggtt ctagtctgtt ctgtcttgcg gcagccgccc
60

ttctgcgc ggtcacgccg agccagcgcc tgggcctgga accgggcccgt agcccccca
120

ttcgccca ccacctccct accatggacc cccgcaaagt gaacgagctt cgggcctttg
180

aaaatgtg taagcaggat ccgagcggtc tgcacaccga ggaaatgcgc ttctgaggg
240

eolf-seql-S000001.txt

gtgggtgga gagcatgggt ggtaaagtac cacctgctac tcagaaagct aaatcagaag
300

aaataccaa ggaagaaaaa cctgatagta agaaggtgga ggaagactta aaggcagacg
360

accatcaag tgaggaaagt gatctagaaa ttgataaaga aggtgtgatt gaaccagaca
420

tgatgctcc tcaagaaatg ggagatgaaa atgcggagat aacggaggag atgatggatc
480

tgcaaatga taaaaaagtg gctgctattg aagccctaaa tgatggtgaa ctccagaaaag
540

gattgactt attcacagat gccatcaagc tgaatcctcg cttggccatt ttgtatgcca
600

gagggccag tgtcttcgtc aaattacaga agccaaatgc tgccatccga gactgtgaca
660

agccattga aataaatcct gattcagctc agccttacia gtggcggggg. aaagcacaca
720

acttctagg ccactgggaa gaagcagccc atgatcttgc ccttgccctgt aaattggatt
780

tgatgaaga tgctagtgca atgctgaaag aagttcaacc tagggcacag aaaattgcag
840

icacggag aaagtatgag cgaaaacgtg aagagcgaga gatcaaagaa agaatagaac
900

igttaagaa ggctcgagaa gagcatgaga gagcccagag ggaggaagaa gccagacgac
960

itcaggagc tcagtatggc tcttttccag gtggctttcc tgggggaatg cctggtaatt
1020

cccggagg aatgcctgga atgggagggg gcatgcctgg aatggctgga atgcctggac
1080

aatgaaat tcttagtgat ccagaggttc ttgcagccat gcaggatcca gaagttatgg
1140

gctttcca ggatgtggct cagaaccag caaatatgtc aaaataccag agcaacccaa
1200

gttatgaa tctcatcagt aaattgtcag ccaaatttgg aggtcaagcg taatgtcctt
1260

gataaata aagcccttgc tgaaggaaaa gcaacctaga tcaccttatg gatgtcgcaa
1320

atacaaac cagtgtacct ctgaccttct catcaagaga gctgggggtgc tttgaagata

eolf-seql-S000001.txt

1380

tccctaccc ctctccccc aatgcagctg aagcatttta cagtggtttg ccattagggg
1440

ttcattcag ataatgtttt cctactagga attacaaact ttaaactt tttaaatctt
1500

aaaatattt aaaacaaatt taaagggcct gttaattctt atatttttct ttactaatca
1560

tttgattt ttttctttga attattggca gggaatatac ttatgtatgg aagattactg
1620

ctgagtga aataaaagt attagtgcga ggcaaacata actcatttga ggataaagt
1680

gtgttgat atgtggttcc tgatgcattt tgacttgtct ttttaaagc tttatctttt
1740

tttaaaga tttatttcaa taaaactaat tgggaccacc cgtatttcag taggacctgg
1800

agggattg gaagtacttg gcagggcagc agcaatcttg ctgtgtttga tataacatgc
1860

ccctgggc aggttgccct taaatcttac actgtggtga agggatgttt tttttgtaat
1920

ctgcagtag agttggagta cttagttctc ttgttgtcca gtatatctaa taagtgtttt
1980

atattatt tccacgtaag ggaaataagg tagtactttt ctttttatat ttctatgctt
2040

aatctctt ttcctagtca aaaattgcc aaatctgtgt ttgctttctg cttgctacat
2100

gtctccct tacttttctt gagctaaaga caggcttttt ccaccggcat catcactgct
2160

catcatta acagcgtaat tatacaagca tatttaaatgc tgagttaaat ttaatatgta
2220

acatatgg taattgtagg gtaataccca caacaactgt agtttcttac ttggccaaga
2280

atgcttat ttaagtgtta gacttcatt ctggcaaaat cttgccttat cagaagacat
2340

gaaagagg gattcccttt ggtgtttggt cttctactta gaaaaacctt ttgcagttag
2400

tatcttgt agtattcatc tttgtattct gaagataagg tttgaattaa attgatacac
2460

eolf-seql-S000001.txt

cagagggga accgattttt tttatccaat gtgaattata aatgagataa tccacagtta
2520

tcattgtgg agttgttgag actatgaaag actcattgtc tttgtattca gctcttaaatt
2580

gtgtaacta tatccccacc tctgcttgct ttctttccct cccctccaat gataaagaaa
2640

tgataaatt ttctgttggt cattcaattc ttattttaaa taagactaag tataggcatt
2700

tacctgaca ttgctacgtt tctaccagtg tttcaattta aagtgctagt gtttaaaaac
2760

ttttcaagg gataaggcct tctgtacttt gcttatttga agaatacagt gtaggagcag
2820

gaagtaaat tctatggagt acattttctaa aataccacat ttctgaaatc ataaataagt
2880

tattcaggt tctaaccctt tgctgtacac aagcagacag aaatgcatct gttacataaa
2940

jagaaaaag ctattatgct gatggagcat gctttttaaa tccttttaaaa acactcacca
3000

ataaacttg catttgagct tgtgtgttct tttgttaatg tgtagagttc tcctttctcg
3060

aattgccag tgtgtacttg gcttaactca agaacagttt cttctggatt ccttatttga
3120

ttatttaac ctaattatat tctaattattg caaatattac cataagtggg taaaagtaaa
3180

tcctcttc tgaaaaaaaa aaaaaaaaaa aaaa
3214

?10> 58
?11> 2973
?12> DNA
?13> Homo sapiens

?20>
?21> misc_feature
?22> (1275)..(1275)
?23> n is a, c, g, t or u

?20>
?21> misc_feature
?22> (2933)..(2933)

eolf-seql-S000001.txt
223> n is a, c, g, t or u
400> 58
jaggcaaat gttaatgagg caatgttaaa tatggaccca atgtcagaca aatacataga
60
aggagtaag ggccaactct catgcataag gtatcccatc ctatagcaaa tcagatatat
120
jgtacgctt gatgccacaa attttttaaa aaattgtcca ttttgttgcg tgtgcacctc
180
cgccataaa tttgagtcag caccagcgac agctctgcag tcttcctatg tgggtactgat
240
agggtggttg cagagcttca gctcacagca acacaatgca gctgagcagg caagcacagc
300
cacagccag aaacagttcc gactctacag aacaagacga cctttaagtt tcccagagaa
360
atgagatgc tgatgttgaa gacgacacca cgggtaagat gttatttaaa tcagtaaaag
420
ctgactttg gaatcttttt cctttttctt ttaagaaaaa gtcaacgtta ggattaaata
480
tattcaat agcaagtgc tgcaccagaa atttgctgca gtgtcagttg agggatattt
540
tatacatt cagtcactct gtaaataaac atattgtttt cctttaaaat gggcactgaa
600
atacagaa aaaaatcact ttataaaatg tgaggtttat aggtactgtg ttggtctgga
660
tttcaagt gctttttaca aagatatatt tctcctaaaa acatacagat aaaaatttcg
720
gactgctt taatatctaa ataaaatcta ccctatatac acacattgaa ttacattacc
780
cagagatt aaaaaaaaaa gacacgacag ccatttttct catctgagta agaaagcata
840
atcaaaaa tagtaatagc ctacaactgc aactatttat ttgcaaagaa tgctatttta
900
atattaag gctctagaaa gataaataag aaagaatatg gttagaaaag gggggaggga
960
gagaaaat aaaggagaaa atgcaggaga gagtagggag agagtctctc tctaccacat
1020
cccaatga aggattaagc attgactata aatgaaggga gctttgttag tttaatcact

eolf-seql-S000001.txt

1080

gaacaatta taaaaggact cgacaacaac gaggtttatt gaaaattttg cctaattgcta
1140

tgacccat gcagatgcct aaactgtatt tgcataataa aagaagggtg tatctgtttg
1200

ttctaggct ttgatggaat atcagatatt gaaaatgtct ctctgcctgt tcattccttct
1260

ttctcaca cctgntatatt tatgcatttg tctctccaa tgtatatgca cagagaggca
1320

aggcatgtg gactgttcag gcagaaactt gtctacatta ccattctggac tgcaagagaa
1380

attatacat ttaaacctgt cttataacca ctttactgat ctgcataacc agttaacca
1440

ataaccaat ctgaggaccc tggacatttc aaacaacagg cttgaaagcc tgctgtctca
1500

ttacctgg tctctgtgga acatgtctgc tgctaacaac aacattaaac ttcttgacaa
1560

ctgtatact gcttatcagt ggaatcttaa atatctggat gtttctaaga acatgtctgga
1620

agggtgtc ctcatataaa atacactaag aagtctcgag gttctcaacc tcagtagtaa
1680

aaacttttg acagttccaa ccaacatgcc ctccaaacta catatcgtgg acctgtctaa
1740

tattctttg acacaaattc ttccaggtac attaataaac ctgacaaatc tcacacatct
1800

acctgcac aacaataagt tcacattcat tccagaccaa tcttttgacc aactctttca
1860

tgcaagag ataacccttt acaataacag gtggatcatgt gaccacaaac aaaacattac
1920

acttactg aagtggatga tggaacaaa agcccatgtg atagggactc catgttctac
1980

aaatatca tcttttaaagg aacataacat gtatcccaca ctttctggat ttacctcaag
2040

tattcact gtaagtggga tgcagacagt ggacaccatt aactctctga gtgtggtaac
2100

aaacccaaa gtgacccaaa tacccaaaca atatcgaaca aaggaaacaa cgtttggtgc
2160

eolf-seql-S000001.txt

actctaagc aaagacacca cctttactag cactgataag gcttttgtgc cctatccaga
2220

jatacatcc acagagacta tcaattcaca tgaagcagca gctgcaactc taactattca
2280

stccaagat ggaatgggtca caaacacaag cctcactagc tcaacaaaat catccccaac
2340

cccatgacc ctaagtatca ctagtggcat gccaaataat ttctctgaaa tgcctcaaca
2400

agcacaacc cttaacttat ggagggaaga gacaaccaca aatgtaaaga ctccattacc
2460

ctgtggca aatgcttgga aagtaaagtc ttcatttctc ttattgctca atgttgtggg
2520

atgctggct gtctgagggt ctgcattttc tgaaactaat gaaagcactc ctccctgatg
2580

icagttggg aaaatatgtc catatctaac cagtgattcg agctatatatt aagtattcaa
2640

iaagccagt cttaacattt ctaactctga tgtaaataaa gtaacttgct ttaaataaaa
2700

iaatgcaca atgtcttggt acttgctgct attttactgt ctttaattaag taaactaatg
2760

ttttctttt ataaaaaaaa tgaaatgttt taaggcttca atttattgca caaaatataa
2820

icatctaaa ctttaatatg tatttttatgt atgtttacac tgtcaaacat ctggaaaata
2880

aggtctat gctcataact gtgtcatttg gctttccagt cataccaact ttnagcagaa
2940

aaaatgac ctcaaccattt ttgttctagg gat
2973

10> 59
11> 872
12> DNA
13> Homo sapiens

00> 59
ggcagcca tctcgccgtg agacagcaag tgtcgcgcag ccgtgcgatg ttgtcctcta
60

gccatgta ttcggtcct ggcagagact tggggatgga accgcacaga gccgcgggcc
120

eolf-seql-S000001.txt

ttgcagct gcgattttcg ccctacgttt tcaacggagg tactatactg gcaattgctg
180
agaagattt tgcaattggt gcttctgata ctcgattgag tgaagggttt tcaattcata
240
jcgggatag ccccaaagt tacaattaa cagacaaaac agtcattgga tgcagcggtt
300
catggaga ctgtcttacg ctgacaaaga ttattgaagc aagactaaag atgtataagc
360
tccaataa taaggccatg actacggggg caattgctgc aatgctgtct acaatcctgt
420
tcaaggcg cttctttcca tactatgttt acaacatcat cggaggactt gatgaagaag
480
aaagggggc tgtatacagc tttgatccag taggggtctta ccagagagac tccttcaagg
540
ggaggctc agcaagtgcc atgctacagc ccctgcttga caaccagggtt ggttttaaga
600
atgcagaa tgtggagcat gttccgctgt ccttgacag agccatgcgg ctgggtgaaag
660
gtcttcat ttctgcggct gagagagatg tgtacactgg ggacgcactc cggatctgca
720
gtgaccaa agagggcatc agggaggaaa ctgtttcctt aaggaaggac tgatctgtgt
780
tcttatca ccaatcagtt cagacctggt tgattttgta ctttggaact gtaccttgga
840
gttttggt tattaaaaga gaaacctgaa gt
872

:10> 60
:11> 356
:12> DNA
:13> Homo sapiens

00> 60
ttctctct cgcgcgcggt gtggtggcag caggcgcagc ccagcctcga aatgcagaac
60
cgccggcg agttcgtgga cctgtacgtg ccgcggaaat gtcgcgctag caatcgcac
120
cggtgcca aggaccacgc atccatccag atgaacgtgg ccgagggttga caaggtcaca
180

eolf-seql-S000001.txt

gcaggttta atggccagtt taaaacttat gctatctgcg gggccattcg taggatgggt
240

agtcagatg attccattct ccgattggcc aaggccgatg gcatcgtctc aaagaacttt
300

gactggaga gaatcacaga tgtggaatat ttgtcataaa taaataatga aaacct
356

210> 61

211> 3069

212> DNA

213> Homo sapiens

400> 61

gtttccgct gcatccagac ttcttcaggc ggtggctgga ggctgcgcac ctggggcttt
60

aacatacaa agggattgcc aggacctgcg gcggcggcgg cggcggcggg ggctggggcg
120

gggggcgg accatgagcc gctgagccgg gcaaacccea ggccaccgag ccagcggacc
180

cggagcgc agccctgcgc cgcggaccag gctccaacca ggcggcgagg cggccacacg
240

accgagcca gcgacccccg ggcgacgcgc ggggccaggg agcgctacga tggaggcgct
300

atggcccgg ggcgcgctca cgggtcccct gagggcgctc tgtctcctgg gctgcctgct
360

agccacgcc gccgcgcgc cgtcgcccat catcaagttc cccggcgatg tcgccccaa
420

acggacaaa gatttggcag tgcaatacct gaacaccttc tatggctgcc ccaaggagag
480

agcaacctg tttgtgctga aggacacact aaagaagatg cagaagttct ttggactgcc
540

agacaggt gatcttgacc agaataccat cgagaccatg cggaagccac gctgcggcaa
600

acagatgtg gccaaactaca acttcttccc tcgcaagccc aagtgggaca agaaccagat
660

acatacagg atcattggct acacacctga tctggacca gagacagtgg atgatgcctt
720

ctcgtgcc ttccaagtct ggagcgatgt gacccactg cggttttctc gaatccatga
780

eolf-seql-S000001.txt

ggagaggca gacatcatga tcaactttgg ccgctgggag catggcgatg gatacccctt
840

gacggtaag gacggactcc tggctcatgc cttegcccca ggcactggtg ttgggggaga
900

tcccatttt gatgacgatg agctatggac cttggggagaa ggccaagtgg tccgtgtgaa
960

tatggcaac gccgatgggg agtactgcaa gttccccttc ttgttcaatg gcaaggagta
1020

aacagctgc actgatactg gccgcagcga tggcttcctc tggtgctcca ccacctacaa
1080

tttgagaag gatggcaagt acggcttctg tcccatgaa gccctgttca ccatgggcgg
1140

aacgtgaa ggacagccct gcaagtttcc attccgcttc cagggcacat cctatgacag
1200

gcaccact gagggccgca cggatggcta ccgctggtgc ggcaccactg aggactacga
1260

gcgacaag aagtatggct tctgccctga gaccgccatg tccactgttg gtgggaactc
1320

gaagtgcc cctgtgtct tccccttcac tttcctgggc aacaaatatg agagctgcac
1380

agcgccggc cgcagtgacg gaaagatgtg gtgtgcgacc acagccaact acgatgacga
1440

gcaagtgg ggcttctgcc ctgaccaagg gtacagcctg ttctcgtgg cagcccacga
1500

ttggccac gccatggggc tggagcactc ccaagaccct ggggccctga tggcaccat
1560

acacctac accaagaact tccgtctgtc ccaggatgac atcaagggca ttcaggagct
1620

atggggcc tctcctgaca ttgaccttg caccggcccc acccccacac tgggccctgt
1680

ctcctgag atctgcaaac aggacattgt atttgatggc atcgtcaga tccgtggtga
1740

ttcttcttc ttcaaggacc ggttcatttg gcggactgtg acgccacgtg acaagcccat
1800

ggccccctg ctggtggcca cattctggcc tgagctcccg gaaaagattg atgcggtata
1860

eolf-seql-S000001.txt

jaggcccca caggaggaga aggctgtgtt ctttgcaggg aatgaatact ggatctactc
1920

jccagcacc ctggagcgag ggtaccccaa gccactgacc agcctgggac tgccccctga
1980

jccagcga gtggatgccg cctttaactg gagcaaaaac aagaagacat acatctttgc
2040

jgagacaaa ttctggagat acaatgaggt gaagaagaaa atggatcctg gctttcccaa
2100

tcacgcga gatgcttga atgccatccc cgataacctg gatgccgtcg tggacctgca
2160

jgcggcggc cacagctact tcttcaaggg tgcctattac ctgaagctgg agaaccaaag
2220

tgaagagc gtgaagtttg gaagcatcaa atccgactgg ctaggctgct gagctggccc
2280

jgtcccac aggcccttcc tctccactgc ctccgatata ccgggcctgg agaactagag
2340

iggaccggg aggggcctgg cagccgtgcc ttcagctcta cagctaatca gcattctcac
2400

ctacctgg taatttaaga ttccagagag tggctcctcc cggtgcccaa gaatagatgc
2460

actgtact cctcccaggc gcccttccc cctccaatcc caccaaccct cagagccacc
2520

ttaaagaga tcctttgata ttttcaacgc agccctgctt tgggctgccc tgggtgctgcc
2580

acttcagg ctcttctcct ttcacaacct tctgtggctc acagaacct tggagccaat
2640

agactgtc tcaagagggc actggtggcc cgacagcctg gcacagggca gtgggacagg
2700

atggccag gtggccactc cagaccctg gcttttact gctggctgcc ttagaacctt
2760

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2820

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2880

tgcacttc agcccacata gtgatgggtc cctgttcac tctacttagc atgtccctac
2940

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eolf-seq1-S000001.txt

3000

jccctccc ttcaaccatt ccccatggga aatgtcaaca agtatgaata aagacaccta
3060

gagtggc
3069

?10> 62
?11> 2876
?12> DNA
?13> Homo sapiens

100> 62
ctgtgagc agcgagatcc agggacagag tctcagcctc gccgctgctg ccgccgccg
60

jccagaga ctgctgagcc cgtccgtccg ccgccaccac ccactcogga cacagaacat
120

agtcattg ataaaaatga gctgggttcag aaggccaaac tggccgagca ggctgagcga
180

tgatgaca tggcagcctg catgaagtct gtaactgagc aaggagctga attatccaat
240

ggagagga atcttctctc agttgcttat aaaaatgttg taggagcccg taggtcatct
300

ggagggtcg tctcaagtat tgaacaaaag acggaagggtg ctgagaaaaa acagcagatg
360

tcgagaat acagagagaa aattgagacg gagctaagag atatctgcaa tgatgtactg
420

tcttttgg aaaagttctt gatccccaat gcttcacaag cagagagcaa agtcttctat
480

gaaaatga aaggagatta ctaccgttac ttggctgagg ttgccgctgg tgatgacaag
540

agggattg tcgatcagtc acaacaagca taccaagaag cttttgaaat cagcaaaaag
600

aatgcaac caacacatcc tatcagactg ggtctggccc ttaacttctc tgtgttctat
660

tgagattc tgaactcccc agagaaagcc tgctctcttg caaagacagc ttttgatgaa
720

cattgctg aacttgatac attaatgaa gagtcataca aagacagcac gctaataatg
780

attactga gagacaactt gacattgtgg acatcggata cccaaggaga cgaagctgaa

eolf-seql-S000001.txt

840

caggagaag gaggggaaaa ttaaccggcc ttccaacttt tgtctgcctc attctaaaat
900

cacacagta gaccatttgt catccatgct gtcccacaaa tagttttttg tttacgattt
960

cgacagggt tatgttactt ctatttgaat ttctatatatt cccatgtggt ttttatgttt
1020

atattaggg gagtagagcc agttaacatt tagggagtta tctgttttca tcttgagggtg
1080

caatatgg ggatgtggaa tttttatata agttataagt gtttggcata gtacttttgg
1140

acattgtgg cttcaaaagg gccagtgtaa aactgcttcc atgtctaagc aaagaaaact
1200

ctacatac tggtttgtcc tggcggggaa taaaagggat cattggttcc agtcacagggt
1260

agtaattg tgggtacttt aaggtttgga gcacttacaa ggctgtggta gaatcatacc
1320

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1380

ctacagctg cagaagtgtt cctttagaca aagttgtgac ccattttact ctggataagg
1440

cagaaacgg ttcacattcc attatttgta aagttacctg ctgttagctt tcattatttt
1500

ctacactc attttatttg tatttaaagt ttttaggcaa cctaagaaca aatgtaaaag
1560

aaagatgca ggaaaaatga attgcttgggt attcattact tcatgtatat caagcacagc
1620

gtaaaacaa aaacccatgt atttaacttt tttttaggat ttttgctttt gtgatttttt
1680

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1740

cttgagat gatggctagc tttgtttaat gtcttatgaa attttcatga acaatccaag
1800

taattgtt aagaacacgt gtattaaatt catgtaagtg gaataaaagt tttatgaatg
1860

cttttcaa ctactttctc tacagctttt catgtaaatt agtcttggtt ctgaaacttc
1920

eolf-seql-S000001.txt

ctaaaggaa attgtacatt ttttgaaatt ttttccttat tccctcttgg cagctaattgg
1980

ctcttacca agtttaaaca caaaatttat cataacaaaa atactactaa tataactact
2040

tttccatgt cccatgatcc cctctcttcc tccccaccct gaaaaaaatg agttcctatt
2100

tttctggga gaggggggga ttgattagaa aaaaatgtag tgtgttccat ttaaaatttt
2160

gcatatggc attttctaac ttaggaagcc acaatgttct tggcccatca tgacattggg
2220

agcattaac tgtaagtttt gtgcttccaa atcacttttt ggtttttaag aatttcttga
2280

actcttata gcctgccttc aattttgatc ctttattctt tctatttgtc aggtgcacaa
2340

attaccttc ctgttttagc cttctgtctt gtcaccaacc attcttactt ggtggccatg
2400

acttggaag aaggccgcat gatctttctg gctccactca gtgtctaagg caccctgctt
2460

ctttgcttg catcccacag actatttccc tcctcctatt tactgcagca aatctctcct
2520

agttgatga gactgtgttt atctcccttt aaaaccctac ctatcctgaa tggctctgtca
2580

gtctgcct ttaaaatcct tcctctttct tcctcctcta ttctctaaat aatgatgggg
2640

aaagttata cccaaagctc actttacaaa atatttcctc agtactttgc agaaaacacc
2700

aaacaaaat gccattttta aaaaggtgta ttttttcttt tagaatgtaa gctcctcaag
2760

gcagggaca atgttttctg tatgttctat tgtgcctagt acactgtaaa tgctcaataa
2820

attgatga tgggaggcag tgagtcttga tgataagggt gagaaactga aatccc
2876

:10> 63
:11> 3401
:12> DNA
:13> Homo sapiens

eolf-seql-S000001.txt

400> 63

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60

ccgttgcca gatgtccaca atgggaaacg aggccagtta cccggcggag atgtgctccc
120

ctttgacaa tgatgaaatt aaaaggctgg gcaggagggt taagaagttg gacttggaca
180

atcagggtc tctgagcgtg gaggagttca tgtccctgcc ggagctgcgc cacaaccgt
240

ggtgcggcg agtgatcgac gtcttcgaca ccgacggtga tggagaagtg gacttcaagg
300

attcatcct ggggacctcc cagttcagcg tcaagggcga cgaggagcag aagttgagggt
360

cgcttcag catttacgac atggataaag atggctacat ttccaacggg gagctcttcc
420

ggtgctgaa gatgatggtg ggcaacaacc tgacggactg gcagctccag cagctggtcg
480

aaaaccat catcatcctg gacaaggatg gcgatgggaa gatatccttt gaggaattca
540

gctgtggt cagagacctg gagatccaca agaagctggt cctcatcgta tgagcctttt
600

ttacaagc accacccaac aacttctgct ttcttcccta tctctttcaa gatttgc tca
660

jacgtccaa ctgtctctct gacttatctg gaagtatttc tttttgtgaa gccatatgtc
720

aacaggag cttcatcacc aactcagtgc tattaattct ccttctctga atgactcagg
780

accctata gggggaagag caagtcaaat gagcatagtg gggaaagaaa aggaaatggc
840

ttataaac atcttttact ttgttttgat tcaaagacca aactagaact taaaagttc
900

aaataaga aagtatacat ttttgctggt atttctcatc attttgata tgggaggaaa
960

tataattt gcatgggtgt taggtgaact gttttcattt gcttgtgttc agatatcttg
1020

agattggt aacttcctat tgtagcaaca gggacaaata tatttgtctt tgctgggcat
1080

eolf-seql-S000001.txt

cgtaatca cttttcttag gggacagaat cccatctttt ccttcggcag attgcagccc
1140

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1200

tcctcctg acttggttgc ccagctcctg aacagaaact agcttcaggg ctcttatagg
1260

aatgctaag cctggactaa gtgccagct cagccatcat cctcattagc agtgggtttc
1320

agggttggc agccacacac agcattaatt tcaatgaagg ggacctccag ctaaataagg
1380

agcaaagt gttctcccag aaagtgtctt cacctccgac actggtcctt acccccaggt
1440

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1500

tggaatct cctaggatg ccaaagtggc attatgtctg ttgctcacag atgcagagac
1560

jacaattgt gtctccacag cagaggtgga tgctagctac accagctatg ctgattttga
1620

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1680

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1740

cggagcct gtggttccag gggagatcca gaatgcatgt gtctcttccc acgcatttat
1800

catgttgg tagctttaga tcagccatgg tgagaaaaga acaaaagctt ttagttgttt
1860

gttttggt ttggagaatt tgtttaccag taaatacatc actgcctgta ccccaaagt
1920

ccagctcc ctgaggtgtc ccacatacta ttgtgagttc tcagagcatg aactgtcctc
1980

aagagcag ggctaggact tgtcccagca tctgtgcctc cataccaatc ctctttctca
2040

gagaacca ctcccatat aagatgctta aggctctcaa aacagcagaa caatgaaaca
2100

ctctccct acacttgctt agccaagaga taccactcag gtaacttttt tcaggacatg
2160

agatctgt ttcaaggaga tttactgcta ttttatttgg aagaagctgg caactggtct

eolf-seql-S000001.txt

2220

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2340

aggaaatcct tacccttca attcctgttc aaccctaaaa actgtgataa acgctcccaa
2400

ctgtgggtg atcagggtta tgtaatgttc aaagattcag acacacctgg gtttggattc
2460

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2520

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2580

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2640

tcccttcc cccttcttcc ccttctacaa gatcaatatg taaaggagac atgaggctta
2700

ggttgctt ttgaacactt acttagttct tagctacacc cactctaaaa ttaactggac
2760

tagtgtac agcccatgtc caagcccaga gagaaaacaa tgggaacaat ttcaaggctc
2820

accactcc ttcatttgca gaggggacaa cagactttct gaccagagaa ctggagaatt
2880

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2940

ggaggaag tgagcacatg tcatgctagc caagaggaca ttattgtcat taaagagagg
3000

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3060

ggcttgaa acatattgga ttacatgctc acatttaaca aagagaggaa atgtgtttca
3120

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3180

taaggctt tgtggcaatg accttgaact gagagcctgt atctggattt agcacttgaa
3240

atctaact ggatatttgg gttaaaagaa tcacatttat tcccaaatcg gaatgctttg
3300

eolf-seql-S000001.txt

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3360

atgataat aaacatttat tgagcaaaaa aaaaaaaaaa a
3401

210> 64
211> 3454
212> DNA
213> Homo sapiens

100> 64
aaatgact gctgtccatg caggcaacat aaacttcaag tgggatccta aaagtctaga
60

atcaggact ctggcagttg agagactggt ggagcctctt gttacacagg ttacaaccct
120

ataaacacc aatagtaaag ggccctctaa taagaagaga ggtcgttcta agaaggccca
180

ttttggct gcatctgttg aacaagcaac tgagaatttc ttggagaagg gggataaaat
240

caaaaagag agccagtttc tcaaggagga gcttgtggtt gctgtagaag atgttcgaaa
300

aaagtgat ttgatgaagg ctgctgctgg agagttcgca gatgatccct gctcttctgt
360

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600

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660

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720

acagggac ctgatataca agcagctgca gcaggcggtc acagggattt ccaatgcagc
780

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840

eolf-seql-S000001.txt

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900

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960

jccgactcg tctgcacgc gtgatgaccg tcgtgagcga attgtggcag agtgtaatgc
1020

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1080

agaagtgat gcactcaatt ctgcaataga taaaatgacc aagaagacca gggacttgcg
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1200

scacttttg gtattgattg aagctgcaaa gaatggaaat gagaaagaag ttaaggaata
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1800

gctcggac cctgcccagc ccatggatga gaatgagttt atcgatgctt cccgcctggg
1860

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1920

eolf-seql-S000001.txt

gatgactct gactttgaga cagaggattt tgatgtcaga agcgagacga gcgtccagac
1980

gaagacgat cagctgatag ctggccagag tgcccgggcg atcatggctc agcttcccca
2040

gagcaaaaa gcgaagattc gggaacaggt ggccagcttc caggaagaaa agagcaagct
2100

gatgctgaa gtgtccaaat gggacgacag tggcaatgac atcattgtgc tggccaagca
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2880

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gtatgctt aaataaaata aaattcataa ccaagagatc cacattagct tgtagtaat
3000

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eolf-seql-S000001.txt

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3454

:10> 65

:11> 1939

:12> DNA

:13> Homo sapiens

00> 65

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120

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180

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240

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420

acagccgc taccggaaac aaatggctgt caagaaatac ttggcggccg tcctagggaa
480

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eolf-seq1-S000001.txt

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720

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960

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1140

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1260

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1320

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1380

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1440

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1560

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1620

eolf-seql-S000001.txt

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1680

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1740

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1800

tttagaaac ccctctgtag ccactagtaa gtaattatgc actaaatâtg aaccctttgt
1860

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1920

aaatttat ttcataaaa
1939

!10> 66
!11> 2193
!12> DNA
!13> Homo sapiens

00> 66
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60

cttacact cgggcctcag aagtcctgtc cagtgaccgg agcggcggcg gcgagcggtt
120

ttgtgggc tagaagaatc ctgcaaaaat gtctctctat ccatctctcg aagacttgaa
180

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240

tgtcagaa gcttctgctc ctatccctca cgatggaaat ctctatccca gactgtatcc
300

agctctct caatacatgg ggctgagttt aatgaagaa gaaatacgtg caagtgtggc
360

tggtttct ggtgcaccac ttcaggggca gttggttagca agaccttcca gtataaacta
420

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480

ttcgtgaa gtcattttgt gtaaggatca agatggaaaa attggactca ggcttaaatac
540

tagataat ggtatatattg ttcagctagt ccaggctaata tctccagcct cattgggttg
600

eolf-seql-S000001.txt

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660
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720
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780
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960
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1080
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1320
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1380
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1620
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1680

eolf-seql-S000001.txt

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1740

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1800

tttagtca acacataatg gaaacttctt tcttctaaaa gttgccagtg ccacttttaa
1860

agtgaaac actatatgtg atgtaaaagt tattacacta aacaggataa acttttgact
1920

cccttttgt tcatttgtgg attaagtggg ataatactta attttggcat ttgactctta
1980

tattatgta acctagctac tttgggatgg tcttagaata tttttctgat aacttgttcc
2040

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2100

tttttggg ttatgtctat tctaattaaa tatgtataaa taaagttaca ttttagtctg
2160

aaaaaaaa aaaaaaaaaa aaaaaaaaaa aaa
2193

10> 67
11> 5189
12> DNA
13> Homo sapiens

00> 67
ggccaagt cgggtggctg cggcgcgagg gccggcgtgg gcggcggcaa cggggcactg
60

ctgggtga acaatgctgc aaaaaaagaa gagtcagaaa ctgccaacaa aaatgattct
120

aaagaagt tgtctgttga gagagtgtat cagaagaaga cacaacttga acacattctt
180

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240

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300

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420

eolf-seql-S000001.txt

.tccagtag tagaacacaa ggtagagaaa gtttatgttc ctgctttaat ttttggacag
480

.tttaacat ccagtaacta tgatgatgat gagaaaaaag ttacaggtgg tcgtaatggt
540

.tggtgcaa aactttgtaa tattttcagt acaaagttta cagtagaaac agcttgcaaa
600

.atacaaac acagttttta gcagacatgg atgaataata tgatgaagac ttctgaagcc
660

.aattaaac attttgatgg tgaagattac acatgcataa cattccaacc agatctgtcc
720

.atttaaga tggaaaaact tgacaaggat attgtggccc tcatgactag aagggcatat
780

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840

.tggatttc gcagttatgt agatctttat gtgaaagaca aattggatga aactgggggtg
900

.cctgaaag ttattcatga gcttgcaaat gaaagatggg atgtttgtct cacattgagt
960

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1020

.cgtggatt atgtggtaga tcaagttggt ggtaaactga ttgaagtagt taagaaaaag
1080

.caaagctg gtgtatcagt gaaaccattt caagtaaaaa accatatatg ggtttttatt
1140

.ttgcctta ttgaaaatcc aacttttgat tctcagacta aggaaaacat gactctgcag
1200

.caaaagtt ttgggtctaa atgccagctg tcagaaaaat tttttaaaagc agcctcta
1260

.tggcattg tagaaagtat cctgaactgg gtgaaattta aggctcagac tcagctgaat
1320

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1380

.tgatgctg gtggtaaaca ttccctggag tgtacactga tattaacaga gggagactct
1440

.caaatcac tggctgtgtc tggattaggt gtgattggac gagacagata cggagttttt
1500

.actcaggg gcaaaattct taatgtacgg gaagcttctc ataaacagat catggaaaat

eolf-seql-S000001.txt

1560

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1620

agaatctc tgaaaacctt acgctatgga aagattatga ttatgaccga tcaggatcaa
1680

tggttctc acataaaaagg cctgcttatt aatttcaccc atcacaattg gccatcactt
1740

gaagcatg gttttcttga agagttcatt actcctattg taaaggcaag caaaaataag
1800

ggaacttt ccttctacag tattcctgaa ttgacgaat ggaaaaaaca tatagaaaac
1860

gaaagcct ggaaaataaa gtactataaa ggattgggta ctagtacagc taaagaagca
1920

ggaatatt ttgctgatat ggaaaggcat cgcaccttgt ttagatatgc tggtcctgaa
1980

tgatgctg ccattacctt ggcathtagt aagaagaaga ttgatgacag aaaagaatgg
2040

aacaaatt ttatggaaga ccggagacag cgtaggctac atggcttacc agagcaattt
2100

atatggta ctgcaacaaa gcatttgact tataatgatt tcatcaacaa ggaattgatt
2160

cttctcaa actcagacaa tgaaagatct ataccatctc ttgttgatgg ctttaaacct
2220

ccagcgga aagttttatt tacctgtttc aagaggaatg ataaacgtga agtaaaagtt
2280

ccagttgg ctggctctgt tgctgagatg tcggcttatc atcatggaga acaagcattg
2340

gatgacta ttgtgaattt ggctcagaac tttgtgggaa gtaacaacat taacttgctt
2400

gcctattg gtcagtttgg aactcggctt catggtggca aagatgctgc aagccctcgt
2460

tattttca caatgttaag cactttagca aggctacttt ttctgctgt ggatgacaac
2520

ccttaagt tcctttatga tgataatcaa cgtgtagagc ctgagtggta tattcctata
2580

tcccatgg ttttaataaa tggtgctgag ggcattggta ctggatgggc ttgtaaacta
2640

eolf-seql-S000001.txt

caactatg atgctaggga aattgtgaac aatgtcagac gaatgctaga tggcctggat
2700

tcattcca tgcttccaaa ctacaaaaac tttaaaggca cgattcaaga acttgggtcaa
2760

ccagtatg cagtcagtgg tgaaatat ttagtggaca gaaacacagt agaaattaca
2820

gcttccag ttagaacttg gacacaggta tataaagaac aggtttttaga acctatgcta
2880

tggaacag ataaaacacc agcattaatt tctgattata aagaatatca tactgacaca
2940

tgtgaaat ttgtggtgaa aatgactgaa gagaaactag cacaagcaga agctgctgga
3000

gcataaag tttttaaact tcaaactact cttacttgta attccatggg actttttgat
3060

tatgggat gtctgaagaa atatgaaact gtgcaagaca ttctgaaaga attctttgat
3120

acgattaa gttattacgg ttacgtaag gagtggcttg tgggaatggt gggagcagaa
3180

tacaaagc ttaacaatca agcccgttc attttagaga agatacaagg gaaaattact
3240

agagaata ggtcaaagaa agatttgatt caaatgttag tccagagagg ttatgaatct
3300

cccagtga aagcctggaa agaagcacia gaaaaggcag cagaagagga tgaacacaa
3360

ccagcatg atgatagttc ctccgattca ggaactcctt caggcccaga ttttaattat
3420

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3480

agatgcaa aagggcgaga ggtcaatgat cttaaaagaa aatctccttc agatctttgg
3540

agaggatt tagcggcatt tggtgaagaa ctggataaag tggaatctca agaacgagaa
3600

tgttctgg ctggaatgtc tggaaaagca attaaaggta aagttggcaa acctaagggtg
3660

jaaactcc agttggaaga gacaatgccc tcaccttatg gcagaagaat aattcctgaa
3720

eolf-seql-S000001.txt

tacagcta tgaaggcaga tgccagcaaa aagttgctga agaagaagaa gggatgatctt
3780

tactgcag cagtaaaagt ggaatttgat gaagaattca gtggagcacc agtagaaggt
3840

aggagaag aggcattgac tccatcagtt cctataaata aagggtcccaa acctaagagg
3900

gaagaagg agcctggtac cagagtgaga aaaacaccta catcatctgg taaacctagt
3960

aaagaaag tgaagaaacg gaatccttgg tcagatgatg aatccaagtc agaaagtgat
4020

ggaagaaa cagaacctgt ggattattcca agagattctt tgcttaggag agcagcagcc
4080

aagaccta aatacacatt tgattttctca gaagaagagg atgatgatgc tgatgatgat
4140

tgatgaca ataattgattt agaggaattg aaagttaaag catctcccat aacaaatgat
4200

ggaagatg aatttgttcc ttcagatggg ttagataaag atgaatatac attttcacca
4260

caaatcaa aagccactcc agaaaaatct ttgcatgaca aaaaaagtca ggattttgga
4320

tctcttct catttccttc atattctcag aagtcagaag atgattcagc taaatttgac
4380

taatgaag aagattctgc ttctgttttt tcaccatcat ttggtctgaa acagacagat
4440

agttccaa gtaaaacggt agctgctaaa aagggaacac cgtcttcaga tacagtcctt
4500

gccaaga gagccccaaa acagaagaaa gtagtagagg ctgtaaactc tgactcggat
4560

agaatttg gcattccaaa gaagactaca acaccaaag gtaaaggccg aggggcaaag
4620

aaggaaag catctggctc tgaaaatgaa ggcgattata accctggcag gaaaacatcc
4680

aacaacaa gcaagaaacc gaagaagaca tcttttgatc aggattcaga tgtggacatc
4740

ccctcag acttccctac tgagccacct tctctgccac gaaccggctc ggctaggaaa
4800

agtaaaat attttgcaga gtctgatgaa gaagaagatg atgttgattt tgcaatgttt

eolf-seql-S000001.txt

4860

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4920

ctctgtct cagacttttg tacatctggc ttattttaat gtgatgatgt aattgacggt
4980

tttattat tgtggtaggc cttttaacat tttgttctta cacatacagt tttatgctct
5040

tttactca ttgaaatgac acgtactgac tgattggcct gtagaattgt tatagactgc
5100

tgcattag cacagatttt aattgtcatg gttacaaact acagacctgc tttttgaaat
5160

aatttaaa cattaaaaat ggaactgtg
5189

10> 68
11> 2836
12> DNA
13> Homo sapiens

00> 68
ccctcagc gtccggccga ggcgcggtgt atgctgagcc gctgccgcag cgggctgctc
60

cgtcctgg gccttagctt cctgctgcag acccgccggc cgattctcct ctgctctcca
120

tctcatga agccgctggt cgtgttcgct ctcggcgggc ccggcgccgg caaggggacc
180

gtgcgccc gcatcgtcga gaaatatggc tacacacacc tttctgcagg agagctgctt
240

tgatgaaa ggaagaacct agattcacag tatggtgaac ttattgaaaa gtacattaaa
300

aggaaaga ttgtaccagt tgagataacc atcagtttat taaagagga aatggatcag
360

aatggctg ccaatgctca gaagaataaa ttcttgattg atgggtttcc aagaaatcaa
420

caaccttc aaggatggaa caagaccatg gatgggaagg cagatgtatc tttcgttctc
480

tttgact gtaataatga gatttgtatt gaacgatgac ttgagagggg aaagagtagt
540

aggagtgt atgacaacag agagagcttg gaaaagagaa ttcagacctc ccttcagtca

eolf-seql-S000001.txt

600

aaagccaa ttattgactt atatgaagaa atggggaaaag tcaagaaaat agatgcttct
660

atctgttg atgaagtttt tgatgaagtt gtgcagattt ttgacaagga aggctaattc
720

aacctgaa agcatccttg aaatcatgct tgaatattgc tttgatagct gctatcatga
780

ccttttta aggcaattct aatctttcat aactacatct caattagtgg ctggaaaagta
840

tggtaaaa caaagtaaat ttttttatgt tctttttttg gtcacaggag tagacagtga
900

tcaggttt aacttcacct tagttatggg gtcacccaaa cgaagggtat cagctatttt
960

tttaaatt caaaaagaat atccctttta tagtttggtc cttctgtgag caaaactttt
1020

gtacgcgt atatatccct ctagtaatca caacatttta ggatttaggg atacctgctt
1080

tctttttc ttgcaagttt taaatttcca accttaagtg aatttggtga ccaaatttca
1140

ggaacttt ttgtgtagtc agttcttgca caatgtgttt ggtaaacaaa ctcaaaatgg
1200

tcttagga gcattttagt gtttattaaa taactgacca tttgctgtag aaagatgaga
1260

acttaagc tttgttttac tacaacttgt acaaagttgt atgacagggc atattccttg
1320

tccaagat ttgggttggg ggcactaggg gttcagagcc tggcagaatt gtcagcttta
1380

ctgacata atctaagggt atggggcaag gatcacatct aatgcttggt tccttatact
1440

attatata gtgttattca tgattcagct gatcttaaca aaattcgtag cagtgggaacc
1500

gaaatgca tgtggctaga tttatgctaa aatgattctc agttagcatt ttagtaacac
1560

caaagggt tttttttgtt tgttttctag acttaataaa agcttaggat taattagaag
1620

gcaatcta gttaaatttc ccatttgtat tttattttct tgaatacttt tttcatagtt
1680

eolf-seql-S000001.txt

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1740

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1800

tgaagcac cgaaagataa atgattttta aaaggctata gagtccaaag gaatattctt
1860

acaccaat tcttccttta aaaatctctg aggaatttgt tttcgctta ctttttttc
1920

ctgtcaca atgctaagt gtatccgagg ttcttaatat gagatttaaa atcttaaaat
1980

ttcttatt ttcagcactt acatcatttg gtacacaggg tcaaataaggg caaataattt
2040

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2100

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2160

tttcaaca tacttgccat tagaaaacaa agtattgcta agtactataa catattggcc
2220

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2280

gtgttgca ggccagcaaa tacagaggtg gtttaaatcaa acagctctag tatgaagcaa
2340

gtaaagac taaggtttcg agagcattcc tactcacata agtgaagaaa tctgtcagat
2400

gaatctaa atatttatag tgagattgtg aaagcaacct taaagttttg aagaagactg
2460

gagactag gtgctttgct tcctttcctc aggtatcttt ctgtggcatt tgagaacaga
2520

ccaagaaa catggttaatt actaaattat gaggctttgc tttttgtttg cttttaagta
2580

aaaacatg ttggcaacat tgagtttttg agttgattga gataaatga ctttaactagt
2640

tgtcattc catttggtta agatacagtc accaagaatg ttttgagttt tttgaaagac
2700

aaatttaa gccttgctta tttttaaatt atttccattc agtgatgttg gatgtatctc
2760

eolf-seql-S000001.txt
ttatttag taaataatct caataaattt tgtgctgtgg cctttgctaa aaaaaaaaaa
2820
.aaaaaaaa aaaaaa
2836

10> 69
11> 1500
12> DNA
13> Homo sapiens

00> 69
ttggagga gttgttggtta ggccgtcccg gagaccggt cgggagggag gaagggtggca
60
atggtggtt ggaaagcact atggtgtgtg tggacaacag tgagtatatg cggaatggag
120
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180
accgcgag caaccctgag aacaacgtgg gccttatcac actggctaata gactgtgaag
240
ctgaccac actcacccca gacactggcc gtatcctgtc caagctacat actgtccaac
300
aagggcaa gatcaccttc tgcacgggca tccgcgtggc ccatctggct ctgaagcacc
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caaggcaa gaatcacaag atgcgcatca ttgcctttgt gggaagccca gtggaggaca
420
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480
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540
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600
gatgctct catcagttct ccgattttgg ctggtgaagg tggtgccatg ctgggtcttg
660
gccagtga ctttgaattt ggagtagatc ccagtgtga tcctgagctg gccttgcccc
720
cgtgtatc tatggaagag cagcggcagc ggcaggagga ggaggcccg cgggcagctg
780
gcttctgc tgctgaggcc gggattgcta cgactgggac tgaagggtgaa agaggtggaa
840

eolf-seql-S000001.txt

:cgaagtcc tgggactgcg ggatgctaaa cattgaaagc tgggtgtagg cactgcaggg
900

agtggtgga ggtctgacag ggtaggaata tgtgggaggg ctgggctagg aatggccttg
960

ggctggcc tgtgtggata tggcaccaat tctaccctgc tcctcttttc cttttccag
1020

tcagacga tgccctgctg aagatgacca tcagccagca agagtttggc cgcactgggc
1080

cctgacct aagcagtatg actgaggaag agcagattgc ttatgccatg cagatgtccc
1140

cagggagc agagtttggc caggcggaat cagcagacat tgatgccagc tcagctatgg
1200

acatctga gccagccaag gaggaggatg attacgacgt gatgcaggac cccgagttcc
1260

cagagtgt cctagagaac ctcccagggtg tggatcccaa caatgaagcc attcgaaatg ...
1320

atgggctc cctggcctcc caggccacca aggacggcaa gaaggacaag aaggaggaag
1380

aagaagtg agactggagg gaaagggtag ctgagtctgc ttaggggact gcatgggaag
1440

cggaatat agggttagat gtgtgttatt tgtaaccatt acagcctaaa taaagcttgg
1500

10> 70
11> 895
12> DNA
13> Homo sapiens

00> 70
catcttgc gtccccgcgt gtgtgcgctt aatctcaggt ggtccacccg agacccttg
60

caccaacc ctagtcccc gcgcggcccc ttattcgctc cgacaagatg aaagaaacaa
120

atgaacca ggaaaaactc gccaaactgc aggcacaagt gcgcattggg gggaaaggaa
180

gctcgcag aaagaagaag gtggttcata gaacagccac agcagatgac aaaaaacttc
240

ctctcctt aaagaagtta ggggtaaaca atatctctgg tattgaagag gtgaatatgt
300

eolf-seql-S000001.txt

acaaacca aggaacagtg atccacttta acaaccctaa agttcaggca tctctggcag
360

gaacacttt caccattaca ggccatgctg agacaaagca gctgacagaa atgctaccca
420

atctttaaa ccagcttggg gcggatagtc tgactagttt aaggagactg gccgaagctc
480

ccccaaaca atctgtggat ggaaaagcac cacttgctac tggagaggat gatgatgatg
540

gtttccaga tcttgtggag aattttgatg aggcttccaa gaatgaggca aactgaattg
600

ttcaacttc tgaagataaa acctgaagaa gttactggga gctgctattt tatattatga
660

gcttttta agaaattttt gtttatggat ctgataaaat ctagatctct aatattttta
720

ccaagcc ccttggacac tgcagctctt ttcagttttt gcttatacac aattcattct
780

gcagctaa ttaagccgaa gaagcctggg aatcaagttt gaaacaaaga ttaataaagt
840

tttgcccta gtaaaaaaaaa aaaaaaaaaa aaaaataaaa aaaaaaaaaa aaaaa
895

10> 71

11> 1777

12> DNA

13> Homo sapiens

00> 71

ctaccctc gccccgcccc cggtcctccg tcggttctct cattagtcca cggtctggtc
60

cagctacc cgccttcgtc tccgagtttg cgactcgcgg gaccggcgtc cccggcgcga
120

aggctgga ctcggatctg ttgcctgagc aatggctgcc atccggaaga aactgggtgat
180

ttgggtgat ggagcctgtg gaaagacatg cttgctcata gtcttcagca aggaccagtt
240

cagaggtg tatgtgccca cagtgtttga gaactatgtg gcagatatcg aggtggatgg
300

agcaggta gagttggctt tgtgggacac agctgggcag gaagattatg atcgccctgag
360

eolf-seql-S000001.txt

ccctctcc taccagata ccgatgttat actgatgtgt ttttccatcg acagccctga
420

gtttagaa aacatcccag aaaagtggac ccagaagtc aagcatttct gtcccaacgt
480

ccatcatc ctggttgga ataagaagga tcttcggaat gatgagcaca caaggcggga
540

tagccaag atgaagcagg agccggtgaa acctgaagaa ggcagagata tggcaaacag
600

ttggcgct tttgggtaca tggagtgttc agcaaagacc aaagatggag tgagagaggt
660

ttgaaatg gctacgagag ctgctctgca agctagacgt gggaagaaaa aatctggttg
720

ttgtcttg tgaaaccttg ctgcaagcac agcccttatg cggttaattt tgaagtgctg
780

tattaatc ttagtgatg attactggcc tttttcattt atctataatt tacctaagat
840

caaatcag aagtcattct gctaccagta tttagaagcc aactatgatt attaacgatg
900

caaccgct ctggcccacc agggtccttt tgacactgct ctaacagccc tcctctgcac
960

ccacctga cacaccaggc gctaattcaa ggaatttctt aacttcttgc ttctttctag
1020

agagaaac agttggtaac ttttgtcaat taggctgtaa ctactttata actaacatgt
1080

tgccctat tatctgtcag ctgcaaggta ctctggtgag tcaccacttc agggctttac
1140

cgtaacag attttgttgg catagctctg ggggtgggcag ttttgaaaat gggctcaacc
1200

aaaagccc aagttcatgc agctgtggca gagttacagt tctgtggttt catgttagtt
1260

cttatagt tactgtgtaa ttagtgccac ttaatgtatg ttaccaaaaa taaatatatc
1320

cccagact agatgtagta ttttgtataa ttggattcta atactgtcat ctcaagaagt
1380

atggttta aagaagtgta ttggaaataa agtcagatgg aaattcattt taaattcccg
1440

gtcactt ttctgataaa agatggccat attaccctt ttcggcccca tgtatctcag

eolf-seql-S000001.txt

1500

.ccccatgg agctgggcta agtaaataagg aattgggttc acgcctcagg caattagaca
1560

ttggaaga tggcataacc tgtctcacct ggacttaagc gtctggctct aattcacagt
1620

tctttctc ctcaactgtat ccagggtccc tcccagagga gccaccagtt ctcatgggtg
1680

actcagtc tctcttctct ccagctgact aaactttttt tctgtaccag ttaatttttc
1740

actactaa tagaataaag gcagttttct aaaaaaa
1777

10> 72

11> 1336

12> DNA

13> Homo sapiens

00> 72

ggcttgca gagccggcgc cggaggagac gcacgcagct gactttgtct tctccgcacg
60

tgttacag aggtctccag agccttctct ctctgtgca aaatggcaac tcttaaggaa
120

actcattg caccagttgc ggaagaagag gcaacagttc caaacaataa gatcactgta
180

gggtgttg gacaagttgg tatggcgtgt gctatcagca ttctgggaaa gtctctggct
240

tgaacttg ctcttggtga tgttttgga gataagctta aaggagaaat gatggatctg
300

gcatggga gcttatttct tcagacacct aaaattgtgg cagataaaga ttattctgtg
360

cgccaatt ctaagattgt agtggttaact gcaggagtcc gtcagcaaga aggggagagt
420

gtcaatc tgggtgcagag aaatgttaat gtcttcaaat tcattattcc tcagatcgtc
480

gtacagtc ctgattgcat cataattgtg gtttccaacc cagtggacat tcttacgtat
540

tacctgga aactaagtgg attacccaaa caccgcgtga ttggaagtgg atgtaatctg
600

ttctgcta gatttcgcta ccttatggct gaaaaacttg gcattcatcc cagcagctgc

eolf-seql-S000001.txt

660

ttggatgga ttttggggga acatggcgac tcaagtgtgg ctgtgtggag tgggtggaat
720

ggcagggtg tttctctcca ggaattgaat ccagaaatgg gaactgacaa tgatagtga
780

ttggaagg aagtgcataa gatggtggtt gaaagtgcct atgaagtcac caagctaaaa
840

atatacca actgggctat tggattaagt gtggctgac ttattgaatc catgttgaaa
900

tctatcca ggattcatcc cgtgtcaaca atggtaaagg ggatgtatgg cattgagaat
960

agtcttcc tgagccttcc atgtatcctc aatgcccggg gattaaccag cgttatcaac
1020

gaagctaa aggatgatga ggttgctcag ctcaagaaaa gtgcagatac cctgtgggac
1080

ccagaagg acctaaaaga cctgtgacta gtgagctcta ggctgtagaa atttaaaaac
1140

caatgtga ttaactcgag cctttagttt tcatccatgt acatggatca cagtttgctt
1200

atcttctt caatatgtga atttgggctc acagaatcaa agcctatgct tggtttaatg
1260

tgcaatct gagctcttga acaaataaaa ttaactattg tagtgcgaaa aaaaaaaaaa
1320

aaaaaaaa aaaaaa
1336

10> 73
11> 1414
12> DNA
13> Homo sapiens

00> 73
ctctgccc gccccagcc ctgccccac cctcggcgcc cgcacatctg cctgctcagc
60

cagacggc gcccgaccc ccgggcgcgg gatccagcca ggtgggagcc ccgcagatga
120

tctctgaa ggtgtgcctg aaccagtgcc agcctgcct gtctgcagca tcggcctgat
180

ggtggtga ctgatccctc agggctccgg agccatgtgg cccaacggca gttccctggg

eolf-seql-S000001.txt

240

cctgtttc cggcccacaa acattaccct ggaggagaga cggctgatcg ctcgcccctg
300

tcgccgcc tccttctgcg tggtagggcct ggcctccaac ctgctggccc tgagcgtgct
360

cgggcgcg cggcaggggg gttagcacac gcgctcctcc ttcctcacct tcctctgcgg
420

tcgtcctc accgacttcc tggggctgct ggtgaccggt accatcgtgg tgtcccagca
480

ccgcgctc ttcgagtggc acgccgtgga ccttggtgct cgtctctgtc gcttcatggg
540

tcgtcatg atcttcttcg gcctgtcccc gctgctgctg ggggcgcgcca tggcctcaga
600

gctacctg ggtatcaccc ggcccttctc gcgcccggcg gtcgcctcgc agcgcgcgc
660

gggccacc gtggggctgg tgtgggcggc cgcgctggcg ctgggcctgc tgcccctgct
720

gcgtgggt cgctacaccg tgcaataccc ggggtcctgg tgcttcctga cgctgggcgc
780

agtccggg gacgtggcct tcgggctgct cttctccatg ctgggcggcc tctcggtcgg
840

tgtccttc ctgctgaaca cggtcagcgt ggccaccctg tgccacgtct accacgggca
900

aggcggcc cagcagcgtc cccgggactc cgaggtaggag atgatggctc agtccttggg
960

tcattggtg gtggccagcg tgtgttggt gcccttctg gtcttcacgc cccagacagt
1020

tcggaaac ccgcctgcc tgagccccgc cgggcagctg tcccgcacca cggagaagga
1080

tgctcatc tacttgcgcg tggccacctg gaaccagatc ctggaccctt ggggttatat
1140

tggtccgc cgcgcgctgc tccggcgtct ccagcctcgc ctgagcaccg ggcccaggtc
1200

tgccctc cagccccagc tcacgcagcg ctccgggctg cagtaggaag tggacagagc
1260

tcctcccg cgcctttccg cggagccctt ggcccctcgg acagcccatc tgctgtttct
1320

eolf-seql-S000001.txt

aggattcag gggctggggg tgctggatgg acagtgggca tcagcagcag ggttttgggt
1380

jaccccaat ccaaccggg gacccccaac tcct
1414

:10> 74
:11> 3080
:12> DNA
:13> Homo sapiens

:00> 74
:ccctttat ttccactccc caccgcgtg gctttgctct ccctctcccc ctcagctcg
60

:tgtatttg gagctccgga agctgccggc gactctcccc tggagcagcg tgactgacac
120

:gctcctat tcagctggga ggagggagag gggaggagaa ggggagggcc gcgggaggag
180

:tacgagtg gccgaccacg gatttgcatt gccgaggacg ggaccccagg gcagcgaagc
240

:aatggcca acatgcaggg actggtggaa agactggaac gagctgtcag ccgcctggag
300

:gctgtctg cagagtccca caggccccct gggaactgcg gggaagtcaa tgggtgtcatt
360

:aggtgtgg caccctccgt ggaagccttt gacaagctga tggacagtat ggtggccgag
420

:tttaaaga acagtaggat ccttgctggg gacgtggaga cccatgcaga aatggtgcac
480

:tgctttcc aggcccagcg ggctttcctt ctgatggcct ctcagtacca acaacccac
540

:gaatgacg tggccgcact tctgaaaccc atatcgaaa agattcagga aatccaaact
600

:cagagaga gaaaccgggg gagtaacatg tttaatcatc tttcggccgt cagcgaaagc
660

:ccctgccc ttggatggat agctgtgtct cccaaacctg gtccttatgt caaggagatg
720

:tgacgctg ccacctttta cactaacagg gtcttaaagg actacaaaca cagtgatttg
780

:tcattgtg attgggtgaa gtcatatattg aacatttggg gtgaacttca agcatacatc
840

eolf-seql-S000001.txt

ggaacacc acaccacggg cctcacatgg agcaaaacag gtcctgtagc atccacagta
900

agcgtttt ctgtcctctc ctctgggcct ggccttcctc caccctctcc tcctctgcct
960

tccagggc cacctccact tttcgagaat gaaggcaaaa aagaggaatc ttctccttca
1020

ctcagctt tatttgccca acttaaccag ggagaagcaa ttacaaaagg gctccgcat
1080

cacagatg accagaagac atacaaaaat cccagcctgc gggctcaagg agggcaaact
1140

atctccca ccaaaagtca cactccaagt cccacatctc ctaaattctta tccttctcaa
1200

acatgccc cagtgttggg gttggaagga aagaaatgga gagtggagta ccaagaggac
1260

gaatgacc ttgtgatttc agagactgag ctgaaacaag tggcttacat tttcaaatgc
1320

aaaatcaa ctattcagat aaaagggaaa gtaaactcca ttataattga caactgtaaa
1380

actcggcc tgggtgtttga caatgtggtg ggcattgtgg aagtgatcaa ctcccaggac
1440

tcaaatcc aggtaatggg gagagtgcc acaatttcca ttaataagac agaagggttg
1500

catatacc tcagtgaaga tgcattagac tgtgagatcg tgagcgccaa gtcattctgaa
1560

gaacatac ttatccctca ggatggtgat tatagagaat ttcccattcc tgaacagttc
1620

gacagcat gggatggatc caagttaatc actgaacctg cagaaattat ggcctaactt
1680

gagagac cgaacccccct cacctgaatc cccctctatc aaacaaacaa aaaagcagca
1740

aaagagct agaagttgca gtagcccta ctgctttagc tttggcctcc aacgattctg
1800

tatagat acagcactgt ttctggcacg cctcgtgggc attttgaaat atttaacgtt
1860

tcattgat ttgcctttgt gtgtgatttt agttccacat gatgacttgt gaacattagg
1920

eolf-seq1-S000001.txt

.tttaaagg aaaaaaaaaa agaattctgt tcccctcata tcatgaacac agtaactgat
1980

gtaaaaag actgcatgat tcactttttac acttatatatt cattgctagt taaaaaataa
2040

.cctttgag aatctaagat gtacatTTTT accttttagg caatttcaat ataatgtaga
2100

tagtagtg tgccctgaaa aatgtacacg ttttttctta ttgttaccac atgttcacct
2160

atcagcgt ggatactgtc agcatgagta catatttcaa cccacgcttg taaaagacat
2220

gagtttat aaaggaccaa attcagttcc ttggtccttg gaagacctat attctctgta
2280

tactgaaa accgaaagtc aattctaatt attcatctta catatTTTT caccatgtca
2340

tgaaaact tgcttttctt ctgcataaga gattcttatg ccaaaaacat taaacagaag
2400

atcatttt ttttgctatg taataacctg caactttgct ctaaaatcaa gtcagttat
2460

ttttccaa gtttgaacat gttaaataac agatgccttg taaattatgt cttaaacgtt
2520

cttataga ctaatttcct cttttccacc tgccagactt gctaaccaag ctgaaaaatg
2580

catgaaaa agccatacat gtattatttc tcctaaaacc taaggcatta tctgttggtt
2640

gcttgctg ctccatatttt gtagtcttga tagtagatgc ttcttcagcg taagagtagc
2700

tgatatcc ctttttatct tttcagtaca tagtgctgaa aaatctgcaa cttcttggat
2760

tatttaat gaattatagt ataatgcttg caggcccagt acaagcatat atattgtgcc
2820

ttacagcc ttggaatac attgtttcca ttttttaaat atcttctata tccatatagt
2880

tcaaatta ttaatgctca tgtaccaagg ttttgctata aaagttttgt ctgtatgaat
2940

tgtggctt tagtaaataa tcatttttca actgtaaact tattctgaaa taaagtaaaa
3000

ctaattgt ttaaatactg tgatgaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa

eolf-seql-S000001.txt

3060

aaaaaaaa aaaaaaaaaa

3080

10> 75

11> 2181

12> DNA

13> Homo sapiens

00> 75

agagccga gctctggagc ctcagcgagc ggaggaggag gcgcagggcc gacggccgag
60ctgcggtg agagccagcg ggccagcgcc agcctcaaca gccgccagaa gtacacgagg
120ccggcggc ggcggtgtgcg tgtaggcccg tgtgcgggag gcggcgcgagg aggagcgagg
180cggcagcc ggctggggcg ggtggcatca tggacgagaa ggtgttcacc aaggagctgg
240cagtggat cgagcagctg aacgagtga agcagctgtc cgagtcccag gtcaagagcc
300tgcgagaa ggctaaagaa atcctgacaa aagaatccaa cgtgcaagag gttcgatgtc
360gttactgt ctgtggagat gtgcatgggc aatttcatga tctcatggaa ctgtttagaa
420ggtggcaa atcaccagat acaaattact tgtttatggg agattatggt gacagaggat
480tattcagt tgaaacagtt aactgcttg tagctcttaa gggtcggttac cgtgaacgca
540accattct tcgagggaat catgagagca gacagatcac acaagtttat ggtttctatg
600gaatgttt aagaaaatat ggaaatgcaa atgtttggaa atattttaca gatctttttg
660tatcttcc tctcactgcc ttggtggatg ggcagatctt ctgtctacat ggtggtctct
720cctcttat agatacactg gatcatatca gagcacttga tcgcctacaa gaagttcccc
780gagggtcc aatgtgtgac ttgctgtggt cagatccaga tgaccgtggt ggttggggta
840

ctcctcg aggagctggt tacacctttg ggcaagatat ttctgagaca tttaatcatg

eolf-seql-S000001.txt

900

caatggcct cacgttggtg tctagagctc accagctagt gatggaggga tataactggt
960

ccatgaccg gaatgtagta acgattttca gtgctccaaa ctattgttat cgttgtggtg
1020

ccaagctgc aatcatggaa cttgacgata ctctaaaata ctctttcttg cagtttgacc
1080

agcacctcg tagaggcgag ccacatgtta ctcgctgtac cccagactac ttcctgtaat
1140

aaattttaa acttgtacag tattgccatg aaccatatat cgacctaatz gaaatgggaa
1200

agcaacagt aactccaaag tgtcagaaaa tagttaacat tcaaaaaact tgttttcaca
1260

ggacaaaa gatgtgccat ataaaaatac aaagcctctt gtcacaaaca gccgtgacca
1320

ttagaatz aaccagttca ttgcatgctg aagcgacatt gttggtcaag aaaccagttt
1380

ggcatagc gctatttgta gttacttttg ctttctctga gagactgcag ataataagat
1440

aaacatta acacctcgtg aatacaattt aacttccatt tagctatagc ttactcagc
1500

gactgtag ataaggatag cagcaaacia tcattggagc ttaatgaaca tttttaaaaa
1560

attaccaa ggctccctt ctacttgta gttttgaaat tgttcttttt attttcaggg
1620

accgttta atttaattat atgatttgtc tgcactcagt ttattcccta ctcaaattct
1680

cccatgt tgttctttgt tattgtcaga acctgggtgag ttgttttgaa cagaactggt
1740

ttccctt cctgtaagac gatgtgactg cacaagagca ctgcagtgtt tttcataata
1800

ttgtgaa ctaagaactg agaaggtaaa attttaattg tatcaatggg caagactggt
1860

gtttatt aaaaaagtta aatcaattga gtaaatttta gaatttgtag acttgtaggt
1920

ataaaaa tcaagggcac tacataacct ctctggtaac tccttgacat tcttcagatt
1980

eolf-seql-S000001.txt

cttcagga tttatttgta tttcacatat tacaatttgt cacattgttg gtgtgcactt
2040

ttgggttct tctgcatat taacttgttt gtaagaaagg aaatctgtgc tgcttcagta
2100

acttaatt gtaaaaccat ataacttgag atttaagtct ttgggttggtg ttttaataaa
2160

agcatggt ttcaggtaga g
2181

10> 76
11> 1315
12> DNA
13> Homo sapiens

00> 76
cttccgtc cagaccggaa cccaagatgg ctgcgctggt gctgagacac gttggtcgtc
60

tgccctcg agcccacttt agccctcagc tctgtatcag aaatgctggt cctttgggaa
120

acggccaa agaagagatg gagcggttct ggaataagaa tataggttca aaccgtcctc
180

tctcccca cattactatc tacagttggt ctcttcccat ggcgatgtcc atctgccacc
240

ggcactgg tattgctttg agtgcagggg tctctctttt tggcatgtcg gccctgttac
300

cctgggaa ctttgagtct tatttggaac ttgtgaagtc cctgtgtctg gggccagcac
360

atccacac agctaagttt gcaacttgtct tccctctcat gtatcatacc tggaatggga
420

cgacactt gatgtgggac ctaggaaaag gcctgaagat tccccagcta taccagtctg
480

gtggttgt cctgggttctt actgtgttgt cctctatggg gctggcagcc atgtgaagaa
540

gaggctcc cagcatcatc ttctacaca ttattacatt cacccatctt tctgtttgtc
600

tcttatct ccagcctggg aaaagttctc cttatttggt tagatccttt tgtattttca
660

tctccttg gagcagtaga gtacctggta gaccataata gtggaaaagg gtctagtttt
720

eolf-seql-S000001.txt

cccttggtt ctaaagatga ggtggctgca aaaactcccc ttttttgccc acagcttgcc
780

ctctcggc ctagaagcag ttattctctc tccatattgg gctttgattt gtgctgaggg
840

agcttttg gctccttctt cctgagacag tggaacaat gccagctctg tggcttctgc
900

tgggggatg ggccgggttg ggggggtgggt tgggtgaagc tttgggttgc cactgcctgt
960

gtttgctg gcttaaagga caattctctt tcattggtga gagcccaggc cattaacaac
1020

acacagtg ttattgaaag aagagaggtg ggggtggagg ggaattagtc tgtcccagct
1080

agggagat aaagagggct agttagtctt tggagcagct gcttttgagg agaaaatata
1140

gctttgga cagaggaag atctagaaaa ttatcattga acatattaat ggttatttct
1200

ttcttgga tttccagaaa agcctcttaa ttttatgctt tctcatcgaa gtaatgtacc
1260

ttttttct gaaactgaat taaatactca ttttaaaaaa aaaaaaaaaa aaaaa
1315

10> 77

11> 1249

12> DNA

13> Homo sapiens

00> 77

cacgagcc agggtttcct cttcaagtag gtctaaaaca ttttttttct cattgacttc
60

tcctgttc taactgccag tactcagaag tcagagttga gagacagagg caccgccgac
120

agacgtga agcactgaat aaatagatca gaatgactga aaaagcccca gagccacatg
180

gaggagga tgacgatgat gagctggaca gcaagctcaa ttataagcct ccaccacaga
240

tccctgaa agagctgcag gaaatggaca aagatgatga gagtctaatt aagtacaaga
300

acgctgct gggagatggc cctgtggtga cagatccgaa agcccccaat gtcgttgtca
360

eolf-seql-S000001.txt

cggtcac cctggtttgt gagagtgcc cgggaccaat caccatggac cttactggag
420

ctggaagc cctcaaaaag gaaaccattg tggttaaagga aggttctgaa tataagagtca
480

attcactt caaagtgaac agggatattg tgtcaggcct gaaatacggt cagcacacct
540

aggactgg ggtgaaagtg gataaagcaa catttatggt tggcagctat ggacctcggc
600

gaggagta tgagttcctc actccagttg aggaggctcc caagggcatt ctggcccagag
660

acgtacca caacaagtcc ttcttcaccg acgatgacaa gcaagaccac ctcagctggg
720

tggaacct gtcgattaag aaggagtgga cagaatgaat gcatccaccc cgttccccac
780

ttgccacc tggaagaatt ctctcaggcg tggtcagcac cctgtccctc ctccctgtcc
840

agctgggt cctcttcaa cactgccaca ttctcttatt gatcgatctt tccccacct
900

cactcaac gtggtcctta gaacaagagg cttaaaaccg ggctttcacc caacctgtc
960

tctgatcc tccatcaggg ccagatcttc cacgtctcca tctcagtaca caatcattta
1020

atttcctt gtcttaccac tattcaagca actagaggcc agaaaatggg caaattatca
1080

aacaggtc ttgactcag gttccagtag ttcatcttaa tgcctagatt cttttgtggt
1140

ttgctggc ccaatgagtc cctagtcaca tcccctgcc gagggagttc ttcttttgtg
1200

agacactg taaacgacac aagagaacaa gaataaaaca ataactgtg
1249

10> 78
11> 1890
12> DNA
13> Homo sapiens

00> 78
cgcgagcg gacgoggcag cgctctgtc tcgctttttc ttattttttcc cccctttccc
60

eolf-seql-S000001.txt

tttttttt ttttttttct tttcttttct cccctcccc cttttcacca tttcccctcg
120

ggcgcttt ccccgggcag gggcagagcc ggtctcacc cccgcctctc cccggccccc
180

cgccctat ggcgagaggg agccccctcc caaccggggc tcgagcgggc gcggcctcag
240

cggggggtc atcatggaac taattcgctg accgaccag cgccgcgagc cgtgcgtccc
300

tcgagcgc cagcgcccg ccccgcgcc cccgatccgc ttcccctttc tccctcctca
360

tggccgag tcgtcccgcg cgcaccgcct ccgcgcgcct atgagaatga ggtggtaacg
420

cccccgga tgaccccgcg tcaccactgt gaggcctaca gctctgccgg ggaggaggag
480

ggaggaag aggaggagaa ggtagctaca gcaagctggg tagcaggcag atccaaagga
540

tcatgaag tttccagggc ctttggaana ccagagattg tctttcctgt tggaaaaggc
600

tcactagg gaagcacaga tgtggaaagt gaatgtgcgg aaaatgcctt caaatcagaa
660

tttctcca tcccagagag atgaagtaat tcaatggctg gccaaactca agtaccaatt
720

acctttac ccagaaacat ttgctctggc tagcagtctt ttggataggt ttttagctac
780

taaaggct catccaaaat acttgagttg tattgcaatc agctgttttt tcttagctgc
840

agactggt gaggaagatg agagaattcc agtactaaag gtattggcaa gagacagttt
900

gtggatgt tctcatctg aaattttgag aatggagaga attattctgg ataagttgaa
960

gggatctt cacacagcca caccattgga ttttcttcat attttccatg ccattgcagt
1020

caactagg cctcagttac ttttcagttt gcccaaattg agccatctc aacatttggc
1080

tccttacc aagcaactac ttcactgtat ggcctgcaac caacttctgc aattcagagg
1140

eolf-seql-S000001.txt

ccatgctt gctctggcca tggtagtct ggaaatggag aaactcattc ctgattggct
1200

ctcttaca attgaactgc ttcagaaagc acagatggat agctcccagt tgatccattg
1260

gggagctt gtggcacatc acctttctac tctgcagtct tccctgcctc tgaattccgt
1320

atgtctac cgtcccctca agcacacctt ggtgacctgt gacaaaggag tgttcagatt
1380

atccctcc tctgtcccag gccagactt ctccaaggac aacagcaagc cagaagtgcc
1440

tcagaggt acagcagcct tttaccatca tctcccagct gccagtgggt gcaagcagac
1500

ctactaaa cgcaaagtag aggaaatgga agtggatgac ttctatgatg gaatcaaacg
1560

cttataat gaagataatg tctcagaaaa tgtgggttct gtgtgtggca ctgatttatt
1620

gacaagag ggacatgctt ccccttgtcc acctttgcag cctgtttctg tcatgtagtt
1680

aacaagtg ctacctttga gtgtaaacta aggtagacta ctttggaat gagaacatgc
1740

aatcagga aaggctgtag aaggaaatat accttaacag gctgatttgg agtgagccag
1800

aaaaaaaa taaaactctc attatttgtg tggctaatta taattcagcg ttattttaagc
1860

ataaagac caaaaaaaaa aaaaaaaaaa
1890

10> 79

11> 1124

12> DNA

13> Homo sapiens

00> 79

cgctgcca ccgcaccccg ccatggagcg gccgtcgctg cgcgccctgc tctcggcg
60

ctgggctg ctgctcctgc tctgcccct ctctcttcc tctcttcgg acacctgcg
120

cctgcgag ccggcctcct gccgcacct gcccccgtg ggctgcctgc tgggcgagac
180

eolf-seql-S000001.txt

gcgacgcg tgcggctgct gccctatgtg cgcccgcggc gagggcgagc cgtgcggggg
240

gcggcgcc ggcagggggg actgcgcgcc gggcatggag tgcgtgaaga gccgcaagag
300

ggaagggt aaagccgggg cagcagccgg cgggccgggt gtaagcggcg tgtgcgtgtg
360

agagccgc taccgggtgt gcggcagcga cggcaccacc taccgagcgc gctgccagct
420

gcgccgcc agccagaggg ccgagagccg cggggagaag gccatcacc ccagtcagcaa
480

gcacctgc gagcaaggct cttccatagt gacgcccccc aaggacatct ggaatgtcac
540

gtgcccag gtgtacttga gctgtgaggt catcggaatc ccgacacctg tctcatctg
600

acaaggta aaaaggggtc actatggagt tcaaaggaca gaactcctgc ctggtgaccg.
660

acaacctg gccattcaga cccgggggtgg ccagaaaaag catgaagtaa ctggctgggt
720

tggtatct cctctaagta aggaagatgc tggagaatat gagtgccatg catccaattc
780

aaggacag gcttcagcat cagcaaaaat tacagtgggt gatgccttac atgaaatacc
840

tgaaaaaa ggtgaagggt ccgagctata aacctccaga atattattag tctgcatggt
900

aaagtagt catggataac tacattacct gttcttgcct aataagtttc ttttaatcca
960

ccactaac acttttagtta tattcactgg ttttacacag agaaatacaa aataaagatc
1020

acatcaag actatctaca aaaatttatt atatatttac agaagaaaag catgcatatc
1080

taaacaaa taaaatactt tttatcacia aaaaaaaaaa aaaa
1124

10> 80

11> 1867

12> DNA

13> Homo sapiens

10> 80

eolf-seql-S000001.txt

ttcgctgt ggcgggccc tgggcgccg gctgtttaac ttcgcttccg ctggcccata
60
gatctttg cagtgaccca gcagcatcac tgtttcttgg cgtgtgaaga taaccaagg
120
ttgaggaa gttgctgaga agagtgtgct ggagatgctc taggaaaaaa ttgaatagt
180
acgagttc cagcgcaagg gtttctggtt tgccaagaag aaagtgaaca tcatggatca
240
acaacagc ctgccacctt acgctcaggg ctggcctcc cctcaggggtg ccatgactcc
300
gaatccct atcttttagtc caatgatgcc ttatggcact ggactgaccc cacagcctat
360
agaacacc aatagtctgt ctattttgga agagcaacaa aggcagcagc agcaacaaca
420
agcagcag cagcagcagc agcagcagca gcagcagcag cagcagcagc agcagcagca
480
agcagcag cagcagcagc agcagcagca gcaacaggca gtggcagctg cagccgttca
540
agtcaacg tcccagcagg caacacaggg aacctcaggc caggcaccac agctcttcca
600
cacagact ctcaaacctg cacccttgcc gggcaccact cactgtatc cctcccccat
660
ctcccatg acccccatca ctctgcccac gccagcttcg gagagttctg ggattgtacc
720
agctgcaa aatattgtat ccacagtga tcttggttgt aaacttgacc taaagaccat
780
cacttcgt gcccgaaacg ccgaatataa tccaagcgg tttgctgcgg taatcatgag
840
taagagag ccacgaacca cggcactgat tttcagttct gggaaaatgg tgtgcacagg
900
ccaagagt gaagaacagt ccagactggc agcaagaaaa tatgctagag ttgtacagaa
960
tgggtttt ccagctaagt tcttggaact caagattcag aatatggtgg ggagctgtga
1020
tgaagttt cctataaggt tagaaggcct tgtgctcacc caccaacaat ttagtagtta
1080
agccagag ttatttcctg gtttaatatc cagaatgatc aaaccagaa ttgttctcct

eolf-seql-S000001.txt

1140

tttttggt tctggaaaag ttgtattaac aggtgctaaa gtcagagcag aaatttatga
1200

tcatttgaa aacatctacc ctattctaaa gggattcagg aagacgacgt aatggctctc
1260

gtaccctt gcctcccca ccccttctt ttttttttt taaacaaatc agtttgtttt
1320

taccttta aatgggtggtg ttgtgagaag atggatggtg agttgcaggg tgtggcacca
1380

tgatgcc ttctgtaagt gccaccgcg ggatgccggg aaggggcatt atttgtcac
1440

agaacacc gcgcagcgtg actgtgagtt gtcataccg tgctgctatc tgggcagcgc
1500

cccattta tttatatgta gattttaaac actgctggtg acaagttggt ttgagggaga
1560

actttaag tgttaaagcc acctctataa ttgattggac ttttaattt taatgttttt
1620

ccatgaac cacagttttt atatttctac cagaaaagta aaaatctttt ttaaaagtgt
1680

tttttcta atttataact cctaggggtt atttctgtgc cagacacatt ccacctctcc
1740

tattgcag gacagaatat atgtgttaat gaaaatgaat ggctgtacat atttttttct
1800

cttcagag tactctgtac aataaatgca gtttataaaa gtgttaaaaa aaaaaaaaaa
1860

aaaaa
1867

10> 81
11> 3236
12> DNA
13> Homo sapiens

00> 81
ccgggcgg cgtgggcgtg agaggcgggg cggggccgcg ctctgcttgc caatgtcttt
60

aggtcacc cggaaggcac gcggaacctc ggcgcggtgc ttccagcagg gtctctccgc
120

ctccagcc ccgcgcccct cgccgcggcc ctcgggcgtc tgcgcgcag ctgcgcccc

eolf-seql-S000001.txt

180

cctctttg gagtctctcg cggcctcaaa gcgcggcctg cgtcgcttcc ggcagttccc
240

ccgcgggc gatggctgcc gctgggggag cccggtgct gcgcgccgct tctgctgtcc
300

ggcggccc ggccggccgg tggctgcacc acgctgggtc ccgcgctgga tccagcggcc
360

ctgaggaa ccggggggccg ggccgggagcg cggaggcgag ccggtcgctg agcgtgtcgg
420

cgggcccc gagcagctca gaagataaaa taacagtcca cttataaac cgtgatggtg
480

acattaac aaccaaagga aaagttggtg attctctgct agatggtgtg gttgaaaata
540

ctagatat tgatggcttt ggtgcatgtg aggaaccct ggcttggtca acctgtcacc
600

atctttga agatcacata tatgagaagt tagatgcaat cactgatgag gagaatgaca
660

ctcgatct ggcatatgga ctaacagaca gatcacggtt gggctgccaa atctgtttga
720

aaatctat ggacaatatg actgttcgag tgctgaaac agtggctgat gccagacaat
780

attgatgt gggcaagacc tcctgaacta gaacaaatag gaatattttc atggaatttt
840

ctattttt ataattatta tttcttaaag tgattaaatg agaacatgga tgagtggact
900

atattatg actagcttta ctattttaat tcaccttgca taactactga attttgtcat
960

ttgaaagt atgcaatttt tattttgggt atattacaaa aatgtcaatc aaatattaaa
1020

atagttaa tgtgatagaa aaaccttaca tatttttttc ttatgtttgt ttagcgactt
1080

gcaaaatg ttttcatata atctcatctg ttacctaga agatagggtta aggaaatata
1140

attattcc tgtttgatgt ggggtgaaggc agagatctaa cctggcttgt ttagggccat
1200

actaatt agaaaatctg tgctagaacc tgtgtcttat tcctataagc tatgtgttca
1260

eolf-seql-S000001.txt

ictgaaact ggagaaatta tgactatfff atttatagta gtagttaaat ctgaatgtgt
1320

ggacaaaa atatttaatt gctcagtaaa ctgcttaact tcaaagatag ttattgacct
1380

itaaataaa tatttcaaaa ttttgattcg gaagactaag tctggacgta gacattataa
1440

ictatcaaa gaagtttgat ctctgttttg actaaactag aggaaaaatg attggatgtg
1500

tattcttt tctaagcaga atggtttaac tttgtactct ttgaaaaata atgctgattt
1560

aaatctct gcctataaca gaatggaaac cttatgaatg aattgtgttt ctctgtcctg
1620

ictggagaa gggaaatgagc aggctgacac gttgcacagc cccagggtggc gccattctct
1680

cgcaagga tggggctgca gggtgagcag cgtgggctgc agtgtgtcag tcccaggagt
1740

gggagtgg caagcaccac agattaccac gtatgtgtgg aagacattcg tactcttctc
1800

tactataa ataaattcat aaaagttaac aaaggggtac acagtatggt ctttggaat
1860

aataaaac atcaactaac ttggactaat tgtgaggaag agcagaacaa attagtagaa
1920

aggttata agacaattga gttagcttca tgtgtattat tgcagcttga tcattttatat
1980

atatttgt ctagtacaat gcttgacata cagcattgtg ttatgcccac tggggacaca
2040

ggtgaaca agacaaggaa tgccatcagg gaattcacct tttattagga aaatataaaa
2100

tgtatgta tgtgcagata atttgcttga actaaactga ctagttctgc taaataagat
2160

taactaa ttcatatgta aaaagtgatt aggaagaact tgaagtatca tttgatgctt
2220

taactatt gagtagtttt tttttttttt ttttggtggg gggagcgggg gacagggctc
2280

ctctgtca ctcaggccag agtacaatag tatgatctcg gctcactgca acttctgcct
2340

eolf-seql-S000001.txt

acagtttca agggattctc gtgcctcagc ctcccaggta gctggtacta caggcacgga
2400

accacgcc tggctaattt ttgtattttt tctagggaca gggttttacc acgttgccca
2460

ictggtctt gaacttttga gctcgagtga tccaccacc tcagcctccc aaaatgctgg
2520

ttacagat gtgagccacc gtgcttggcc ataactattg aatgctttct atgtggagag
2580

icttgtctt aattttctgt tgctataata gaataacaca gactgggtaa tttataaaga
2640

agagattt atttggatca tggttctgga ggctgggagg tccaagagca tggtagcagc
2700

ctgcttgg catctggtga cagctttctt gctgcatcat tacatggtgg aagggaaga
2760

atgcgagt gagagcaaga gggcaaatg attatccttt tatcaggagc ccacttctga
2820

taactaac ccacacctga gataacggca ttaatccatt catgagggtct ctgctcttaa
2880

gagatcac ctcttaaagg acccaccttt caatgccatt aactggcaa ttttaatttca
2940

atgagttt tggaggggac attcaaacca tagcagtgtc ataattttta agtacttcaa
3000

ccaattta ttctcttaat tagcttcatt attcttgtct ttgtgtgtgg attacctaaa
3060

ctccttcc agagctactt taatgattat attcaaccaa agcactctaa aatttagagt
3120

aaattgtc ttatatattca aattagaaaa gttcaaatga agtttaattg tgttatttta
3180

aaaccttc taaaattatt aaatggagga tataatctaa aaaaaaaaaa aaaaaa
3236

10> 82

11> 787

12> DNA

13> Homo sapiens

00> 82

actgtgga ggggcgcacg cccggaagcg gcgagggtag ccatgacggc ctccgtgctg
60

eolf-seql-S000001.txt

aaagtatct cgctagccct gcgcccgaact agcgggcttc tgggaacttg gcagacgcag
120

tagagaga ctcaccagcg agcgtcattg ttgtctttct gggaactcat tcccatgaga
180

agaacctc ttcgaaaaaa gaagaaggta gacctaataa aagaccaaga agcaaaggag
240

cttgaaaa ggaagatccg aaaactggaa aaggctactc aagagctaata tctattgaa
300

ttttatta cccctctaaa gttcttggat aaagcaagag agcggcctca ggtggagctc
360

ctttgagg agactgagag gagagctctg cttctgaaga agtggctcct gtacaagcag
420

agagcgta agatggagag ggacaccatc agggctatgc tagaagccca gcaggaagct
480

ggaggaac tgcaactgga atccccgaag ctccatgctg aggccatcaa gcgggaccc
540

cctgttcc cctttgagaa ggaagggcca cattacacac caccgatccc taactaccaa
600

ccctgaag gcaggtacaa tgacatcacc aagggtgaca cacaagtgga gttaagaga
660

gacttgca ggctgctatc cttaacatgc tgcccctgag agtaggaatg accagggctc
720

gtctgctt tccacagaat caggcatgct gtttaataat actggtttta tcaaaaaaaaa
780

aaaaa
787

10> 83

11> 912

12> DNA

13> Homo sapiens

00> 83

agggatct gagcagctcc ttctagcatc cttcatcctt caggtaccag ccatccagac
60

tgcttgag ctgcagaaac tgagaccaga cctctggcct ggccctcccc aggggcctcc
120

tcctatag tcactgcttc tgcacagat actttcagct gcaactccct actgggtggg
180

eolf-seql-S000001.txt

acccattt caggcagaag gttttggtac cctccactga ccctacaccc agggctgcta
240

gccgcttg tggcttcagg atgaaagggt agaccccggt gaacagcact atgagtattg
300

caagcacg caagatgggt gaacagctta agattgaagc cagcttgtgt cggataaagg
360

tccaaggc agcagcagac ctgatgactt actgtgatgc ccacgcctgt gaggatcccc
420

atcacccc tgtgcccact tcggagaacc cttccggga gaagaagttc ttctgtgctc
480

ctctgagc tcccctgtcc cttctcacia ctctccctt tcccctctcc tgggcccttc
540

taggtcag taattgttgt gagcccctta ggctccttgc atcccatccc taacccttgc
600

gaccatgt gaggttatct gaagcacaag gccaccctc acctatctgt cgaccccat
660

ctaccacc tttgtggccg accccaagca cccagagat atgaggcacc ctttgctcca
720

cacagcag ggccccgtca gactctgcca gcgcgtcctg cccgcttccc tcggtgacct
780

tcagacaa tggagaggga tgggccaggt tcttgctctc agtctcacct ggagctactg
840

agggtaaa gccatttgaa gaataaagtc atccagagcc ccaaaaaaaaa aaaaaaaaaa
900

aaaaaaaa aa
912

10> 84
11> 1700
12> DNA
13> Homo sapiens

00> 84
agccgccc gggccccgc cagcctcct cctcgcgtcc ctcggtgtcc tccgcgggcc
60

cgcgatgc ggctggggcc gaggaccgcg gcgttggggc tgctgctgct gtgcgccgcc
120

ggccggcg ccggcaaggc cgaggagctg cactaccgcg tgggcgagcg ccgcagcgac
180

eolf-seq1-S000001.txt

cgaccgcg aggcgctgct gggcgctccag gaagatgtgg atgaatatgt taaactcggc
240

cgaagagc agcaaaaaag actgcaggcg atcataaaga aaatcgactt ggactcagat
300

ctttctca ctgaaagtga actcagttca tggattcaga tgtcttttaa gcattatgct
360

gcaagaag caaaacaaca gtttgttgaa tatgataaaa acagtgatga tactgtgact
420

ggatgaat ataacattca gatgtatgat cgtgtgattg actttgatga gaacactgct
480

ggatgatg cagaagagga gtcctttagg aagcttcact taaaggacaa gaagcgattt
540

aaaagcta accaggattc aggtcccgtt ttgagtcttg aagaatttat tgcttttgag
600

tcctgaag aagttgatta tatgacggaa tttgtcattc aagaagcttt agaagaacat
660

caaaaatg gtgatggatt tgtagtttg gaagaatttc ttggtgatta caggtgggat
720

aactgcaa atgaagatcc agaattgata cttgttgaga aagacagatt cgtgaatgat
780

tgacaaag ataacgatgg caggcttgat cccaagagc tgttaccttg ggtagtacct
840

taatcagg gcattgcaca agaggaggcg cttcatctaa ttgatgaaat ggatttgaat
900

tgacaaaa agctctctga agaagagatt ctggaaaacc cggacttggt tctcaccagt
960

agccacag attatggcag acagctccat gatgactatt tctatcatga tgagctttaa
1020

tccgagcc tgtctcagta gagtactggc tccttttata atttgttacc agctttactt
1080

gtgataaa atattgatgt tgtattttac actcttaagt ctttaaccaca gtcagaatta
1140

ttaatgta gaattataat tttggctctt ttaggaaaaa acaaaatctg atatttttcc
1200

acgtattg agcaacaaaa tattaatatt gtgccatatg acaacaaagt ctttcctaaa
1260

ctccatct gtttagtact gtattgtgga atatttgagt tctatttcca gacttgaaaa

eolf-seql-S000001.txt

1320

ttggaggat tttagagatg cctgaacaat attatttaag tagtatgtga ccgagctata
1380

ttttttgt ttttgttcta agtagattta atttggaac tgacaggaca atgttttttag
1440

tttagcatt ttgtttaaaa acctttaag aaaccttttag aaggacttag acctcacata
1500

aatgttga gaagttctgc ttaatttttaaatggtttct ataaagggtt ttattgtatg
1560

atagaact ttatatTTTT gcatatgtat agaggataat tatatttaaat gtataactat
1620

cattatgg tgagtggaaat ttgacattgt ccaaaccttt ttcatttttg agtgattaaa
1680

tgaaatgt cctttgtaaa
1700..

10> 85

11> 961

12> DNA

13> Homo sapiens

00> 85

gaggcgtg cgaactggtg gcagtgagag acttcggcgg acatggctcc cagcgtgcc
60

ggcagaac ccgagtatcc taaaggcatc cgggccgtgc tgctggggcc tcccggggcc
120

ttaaagga cccaggcacc cagattggct gaaaacttct gtgtctgcc ttagctact
180

ggacatgc tgagggccat ggtggcttct ggctcagagc taggaaaaaa gctgaaggca
240

tatggatg ctgggaaact ggtgagtgat gaaatggtag tggagctcat tgagaagaat
300

ggagaccc ccttgtgcaa aaatggtttt cttctggatg gcttccctcg gactgtgagg
360

ggcagaaa tgctcgatga cctcatggag aagaggaaag agaagcttga ttctgtgatt
420

attcagca tcccagactc tctgctgatc cgaagaatca caggaaggct gattcacccc
480

gagtggcc gttcctacca cgaggagtgc aaccctccaa aagagcccat gaaagatgac

eolf-seql-S000001.txt

540

caccgggg aacccttgat ccgtcgatca gatgataatg aaaaggcctt gaaaatccgc
600

gcaagcct accacactca aaccacccca ctcatagagt actacaggaa acgggggatac
660

ctccgcca tcgatgcata ccagaccccc gatgtcgtgt tcgcaagcat cctagcagcc
720

ctccaaag ccacatgtaa agacttggtt atgtttatct aatgttgggt ccaagaagga
780

ttctttcc atccctgtga ggcaatgggt gggaatgata ggacaggcaa agagaagctt
840

tcaggcta gcaaaaatat catttgatgt attgattaaa aaagcacttg cttgatgtat
900

ttggcgtg tgtgctactc tcactctgtgt gtatgtgtgt tgtgtgtgtg tgtgtgtgca
960

961

10> 86

11> 700

12> DNA

13> Homo sapiens

00> 86

ggcgtgag aagccatgag cagcaaagtc tctcgcgaca ccctgtacga ggcggtgcgg
60

agtcctgc acgggaacca gcgcaagcgc cgcaagttcc tggagacggt ggagttgcag
120

cagcttga agaactatga tccccagaag gacaagcgct tctcgggcac cgtcaggctt
180

gtccactc cccgccttaa gttctctgtg tgtgtcctgg gggaccagca gcactgtgac
240

ggctaagg ccgtggatat cccccacatg gacatcgagg cgctgaaaaa actcaacaag
300

taaaaaac tgggtcaagaa gctggccaag aagtatgatg cgtttttggc ctcaagagtct
360

gatcaagc agattccacg aatcctcggc ccaggtttaa ataaggcagg aaagttccct
420

cctgctca cacacaacga aaacatggtg gccaaagtgg atgaggtgaa gtccacaatc

eolf-seql-S000001.txt

480

gtttccaaa tgaagaaggt gttatgtctg gctgtagctg ttggtcacgt gaagatgaca
540

cgatgagc ttgtgtataa cattcacctg gctgtcaact tcttggtgtc attgctcaag
600

aaactggc agaatgtccg ggccttatat atcaagagca ccatgggcaa gccccagcgc
660

atattaag gcacatttga ataaattcta ttaccagttc
700

10> 87

11> 3750

12> DNA

13> Homo sapiens

00> 87

cggcgcgc gcggccccgg cgagcagggg aagccggtgg ccgcggctgc ggaacggggc
60

ggctgccg gtttcgtaac cgtcgctcct cctcgctgac tcgcgggctg tgaggcctgg
120

cggtcggg gccgcaccgc gcggggccgc tcggagtggg ggccgcctgg gggcaggcgg
180

tagaggag caggtacatg tgaagatttt ttggcagctt agcgtggaaa ccattgatca
240

ctgctctc atttctacct gttctgtgtt ggcaaggag agtgcccaaa tgagcaagat
300

cgcagcaa aacagcactc caggggtgaa cggaattagt gttatccata cccaggcaca
360

ccagcggc ttacagcagg ttcctcagct ggtgcctgct ggccctgggg gaggaggcaa
420

ctgtggct cccagcaagc agagcaaaaa gagttcgccc atggatcgaa acagtgcga
480

atcggcaa cgccgagaga ggaacaacat ggctgtgaaa aagagccggt tgaaaagcaa
540

agaaagca caagacacac tgcagagagt caatcagctc aaagaagaga atgaacggtt
600

aagcaaaa atcaaattgc tgaccaagga attaagtgtg ctcaaagatt tgtttcttga
660

atgcacac aaccttgtag acaacgtaca gtccattagc actgaaaata cgacagcaga

eolf-seql-S000001.txt

720

gcgacaat gcaggacagt agacctcacc ctttccagac tttagagctt gtggcttgaa
780

ttaaaggt gtgaccaccg acaccactca tgtcaatggc tgaaagttgt ccatttccat
840

ctcaaaga cccattggag gctattttct gggatcagca ctgaagagtt gattagctaa
900

atgtagc cttgtaattc gaatatctgg ttttaaata tagaggtttt tgtgggaatc
960

aatcccc aaatgttaag gtatatggta aaaaaagaaa tatctgggat cccgatgttc
1020

aataaatc ctgacttccc aagaaatgct tcttttttaa gttgacaaaa ggaatgggga
1080

tggcaggc cgcgcagaag gttcttggtt ttaatggata ggctgaattg gattaagaaa
1140

ttgaatgc cacctatggt aatctatttg tgattttctt ctaaattatg tattataaat
1200

gtagagct atagaaagca atgagtgtgt aatttggagt gattttatat atggcataaa
1260

ttgtttta acataattag tactgttttc ccccaaaagt acaagttttt gagtagcaat
1320

caggttaa gtaaagaaac ttcatcacat cttataggta gtgtgtggcc aattgactta
1380

aaatacaa ataacattta ggaagcaa atgattaaaca caaaaataaa actaaagcat
1440

gaattatg tttttgagat acctttgggc ttagattggc attgttttat tctaaaaacc
1500

actcagtg gtgtagagaa acttgtgtac caaaatttta gtttctgcag atgctagtgt
1560

ttttggat acaattttga caaccaagtt agtaaacaaa atatcttaac agtttgatga
1620

caagctac tgatgagggg ttggaatatt aattcagaag gtagtttctc ttgtgttcaa
1680

tagctgcc atggggctgt tactttttaa gtcaaaattt tcttctgaag gtcattttg
1740

atttgatc ttaaccaagt gattattaga gaaatgtatc aactccatgc catctcccaa
1800

eolf-seql-S000001.txt

taattgtc taagaaaact tgaaagtga aggttttaac ctttaattta tttctcttaa
1860

acatcttt tgatattgtt gttgtgacat ttctttttct ggttagtggg ctttccagac
1920

tgtaccac tgcttctgtt tattcattta tatgcttttg tgtcccataa attatttcag
1980

aatgctga taaaactcag gatattgaca tttttgttga gactaaaaaa tggcagtcgc
2040

aagtaggg actctagagt ctggcttacg tcagtgttgg tagtttagat tgtctttgtc
2100

cgtttttt cttctctctt ttgctttctt ttctttctct tttttctta gcacagttct
2160

ctcaaatt tgtgtatttt ttgtgtgcct gggctggaga tgagagactg agtcataact
2220

tttaaaag tttgtgttat caggatctt attgaacat ggtcattttt ggccacattg
2280

gtttcata ctaggacttg ggatgatgta gccagaataa aactcaagtt gcaccctccg
2340

tggtggaa gattgctgac cgtgccgttt ctgggcagga gaagacatca tggtgtccag
2400

actcagca aagccattct taagagtcgt gaggtccttc tgaatgtaaa actggagccc
2460

gagaagct gtcccaggag ggctgttaac tccctataga gccaggagac aggatagggg
2520

tctagggt ccaacaccag cttaccttgg agtatgaatc taccatgaa ggatgagaga
2580

ttttgaaa aactagccag gacacacca caggatccta ctggctcctt agcagctgat
2640

gtgttaca taattaactt aattggagat gcattaggtc acttgaatgt ataagcaagc
2700

ctatggta ggcgctacag acatttaaatt ctcttgggaa ttcgatgctc ccatggaatt
2760

taccagtt atatgaattg acttaagtat cttgaaaaag aaactttaga gaaagcatca
2820

ggtgtgta ctcagtattt caaatcagaa cacaagattg gaacttttgg aaaaatgggt
2880

eolf-seql-S000001.txt

aaagctttc ctattagcca tggaaatgca aagtttagca gaagcaagca attaggcaga
2940

aacaaaaat gttaagcatg gtgttgctta tcttattgaa gtggttgga atgaaagctt
3000

aaatttgat agatttatca gtataaaatt agggaaacca cgtgtgggga atgaatcaat
3060

agagcttc gggaaattgtg aggtgacttt tgtaactttt gttctgtgtg tgacctgtga
3120

cactagga tgtgatctgc ccttgtgggc aggtccagca tagttaggag ttaggcctta
3180

ataaaattt ctagctgcat ctgagtctcc tgggatgggt gctctttggc tggttttggc
3240

cggatgggt gagatcagag cagctcttcc tgctgctggc ccctgcaatc agttgttggg
3300

gccagtgc agatcactaa gtagtaagat tttaatcaaa cacgaccagg tccgaaatgc
3360

gtcatgag tgtgaaattc tcaaatttac ataaaaagta gaagtataga cagttaaaca
3420

tggtatta aaggagagga aattgtagca gcttttcacg tttcccagtc ccattagag
3480

cttgagac cttgtacctg aacaacccat tttgcaactca gtgctttctg atgccttagg
3540

aaattgttt tgtttcacaa aagctgggaa ggaagaagtc cattctgcag ctgttagatc
3600

cctctcag gaaaaagtac taacttgctc tttttgttcc tggctttcat cagtttgtga
3660

tttctcta ttttttttaa atataatttt atttctttca acaaatataa aataaaaaac
3720

ctttggaa caatgaaaaa aaaaaaaaaa
3750

10> 88
11> 1526
12> DNA
13> Homo sapiens

00> 88
atctgcgc aggcgccccg ctccctaagtc taccaggaa ctgacctgc tctctcctt
60

eolf-seql-S000001.txt

ctgttaga catgggcact ccacagaagg atgttattat caagtcagat gcaccggaca
120

ttgttatt ggagaaacat gcagattata tcgcatccta tggctcaaag aaagatgatt
180

gaatactg tatgtctgag tatttgagaa tgagtggcat ctattggggg ctgacagtaa
240

gatctcat gggacaactt catcgcatga atagagaaga gattctggca tttattaagt
300

tgccaaca tgaatgtggg ggaataagtg ctagtatcgg acatgatcct catcttttat
360

actcttag tgctgtccag attcttacgc tgtatgacag tattaatggt attgacgtaa
420

aaagttgt ggaatatggt aaaggcttac agaaagaaga tggttctttt gctggagata
480

tggggaga aattgacaca agattctctt tttgtgcggt ggcaactttg gctttgttgg
540

aagcttga tgctattaat gtggaaaagg caatcgaatt tgttttatcc tgtatgaact
600

gacggtgg atttggttgc agaccaggtt ctgaatccca tgctgggcag atctattgtt
660

acaggatt tctggctatt acaagtcagt tgcacaaagt aaattctgat ttacttggct
720

tggctttg tgaacgacaa ttaccctcag gcgggctcaa tggaaggccg gagaagttac
780

gatgtatg ctactcatgg tgggtcctgg ctccctaaa gataattgga agacttcatt
840

attgatag agagaaactg cgtaatttca ttttagcatg tcaagatgaa gaaacggggg
900

tttgcaga caggccagga gatatggtgg atccttttca taccttattt ggaattgctg
960

ttgtcact tttgggagaa gaacagatta aacctgttaa tctgtctttt tgcatgcctg
1020

gaagtgct tcagagagtg aatgttcagc ctgagctagt gagctagatt cattgaattg
1080

agttgcat agtatagttt tgccatttta acatttctgt atttgaagtg cttatcgaat
1140

aaaagtga ctactgttaa tattttgtat attgtgttaa attaatttta ataaattata

eolf-seql-S000001.txt

1200

aattataca tattgtaaaa taaagaccgg tatTTTatTTt tctgctTTTT attctgaagt
1260

tggttattc tgactacagt tctttgtgta tacttctgtg tctgttatgt tcaataactg
1320

gctaacata aaataactct aggtttctac ttgatttttc ccccatgtat acctttcatc
1380

gttctatag caagttgatg taaattgggt tgtcaacaag aatgttaact gatgaaagtg
1440

atagaaccc atacatgaat taaatgatgc aaaaaataaa tggctgttga aatttgaaaa
1500

aaaaaaaa aaaaaaaaaa aaaaaa
1526

:10> 89
:11> 2650
:12> DNA
:13> Homo sapiens

:00> 89
cgcgctgg tggcgggcgg gcgtcgttgc agttgcgcca tctgtcagga gcggagccgg
60

aggagggg gctgccgcgg gcgaggagga ggggtcgccg cgagccgaag gccttcgaga
120

cgcgccgc gcccgggcgg gagagtagag gcgaggttgt tgtgcgagcg gcgcgtcctc
180

ccgccccg gcgcgccggt cttctcccag cgcaccgagg accgccccgg cgacacaaaa
240

cgcgcgcc gcgcgcgacc gcccgggcgg cgcgcgccgc gccagggagg gattcgggccg
300

gggcgggg gacaccccgg cgcgcgcgcc tcggtgctct cggaaggccc accggctccc
360

gcccgccg gggaccccc gccagccgct cggccgcgcc ggaggagggc ggggagagga
420

atgtgagt gggctccgga gcctcagcgc cgcgcagttt ttttgaagaa gcaggatgct
480

tctaaacg tggaaaaaga ccagtcctgc ctctgttgta gaagacatgt ggtgtatata
540

gtttgtga tcgttggcgg acattttgga atttagataa tgggctgtgt gcaatgtaag

eolf-seql-S000001.txt

600

taaaagaag caacaaaact gacggaggag agggacggca gcctgaacca gagctctggg
660

ccgctatg gcacagaccc caccctcag cactaccca gcttcggtgt gacctccatc
720

caactaca acaacttcca cgcagccggg ggccaaggac tcaccgtctt tggagggtgtg
780

ctcttcgt ctcataggg gaccttgcgt acgagaggag gaacaggagt gacactcttt
840

ggcccttt atgactatga agcacggaca gaagatgacc tgagttttca caaaggagaa
900

atttcaaa tattgaacag ctcggaagga gattggtggg aagcccgtc cttgacaact
960

agagacag gttacattcc cagcaattat gtggctccag ttgactctat ccaggcagaa
1020

gtggtact ttggaaaact tggccgaaaa gatgctgagc gacagctatt gtcctttgga
1080

ccaagag gtacctttct tatccgagag agtgaaacca ccaaagggtgc ctattcactt
1140

tatccgtg attgggatga tatgaaagga gaccatgtca aacattataa aattcgcaaa
1200

tgacaatg gtggatacta cattaccacc cgggccaggt ttgaaacact tcagcagctt
1260

acaacatt actcagagag agctgcaggt ctctgctgcc gcctagtagt tcctgtcac
1320

agggatgc caaggcttac cgatctgtct gtcaaaacca aagatgtctg ggaaatccct
1380

agaatccc tgcagttgat caagagactg ggaaatgggc agtttgggga agtatggatg
1440

tacctgga atggaaacac aaaagtagcc ataaagactc ttaaaccagg cacaatgtcc
1500

cgaatcat tccttgagga agcgagatc atgaagaagc tgaagcacga caagctggtc
1560

gctctatg cagtgggtgc tgaggagccc atctacatcg tcaccgagta tatgaacaaa
1620

aagtttac tggatttctt aaaagatgga gaaggaagag ctctgaaatt accaaatctt
1680

eolf-seql-S000001.txt

ggacatgg cagcacaggt ggctgcagga atggcttaca tcgagcgcat gaattatata
1740

atagagatc tgcgatcagc aaacattcta gtggggaatg gactcatatg caagattgct
1800

acttcggat tggcccgatt gatagaagac aatgagtaca cagcaagaca aggtgcaaag
1860

cccatca agtggacggc ccccgaggca gccctgtacg ggagggtcac aatcaagtct
1920

cggtgtggt cttttggaat ctactcaca gagctggtca ccaaaggaag agtgccatac
1980

aggcatga acaaccggga ggtgctggag caggtggagc gaggctacag gatgccctgc
2040

gcaggact gccccatctc tctgcatgag ctcatgatcc actgctggaa aaaggaccct
2100

agaacgcc ccacttttga gtacttgcag agcttcctgg aagactactt taccgcgaca
2160

gccccagt accaacctgg tgaaaacctg taaggcccg gtctgcggag agaggccttg
2220

ccagaggc tgccccaccc ctccccatta gttttcaatt ccgtagccag ctgctcccca
2280

agcggaac cgcccaggat cagattgcat gtgactctga agctgacgaa ctccatggc
2340

tcattaat gacacttgtc cccaaatccg aacctcctct gtgaagcatt cgagacagaa
2400

ttgttatt tctcagactt tggaaaatgc attgtatcga tgttatgtaa aaggccaaac
2460

ctgttcag tgtaaatagt tactccagtg ccaacaatcc tagtgctttc cttttttaa
2520

tgcaaatac ctatgtgatt ttaactctgt cttcacctga ttcaactaaa aaaaaaaaaag
2580

ttattttc caaaagtggc ctctttgtct aaaacaataa aatttttttt catgttttaa
2640

aaaaccaa
2650

10> 90
11> 2073

eolf-seql-S000001.txt

?12> DNA

?13> Homo sapiens

!00> 90

!atttagat aatgggctgt gtgcaatgta aggataaaga agcaacaaaa ctgacggagg
60

!agggacgg cagcctgaac cagagctctg ggtaccgcta tggcacagac cccaccctc
120

!cactaccc cagcttcggg gtgacctcca tccccaaact caacaacttc cacgcagccg
180

!ggccaagg actcacctc tttggagggtg tgaactcttc gtctcatagc gggaccttgc
240

!acgagagg aggaacagga gtgacactct ttgtggccct ttatgactat gaagcacgga
300

!gaagatga cctgagtttt caciaaggag aaaaatttca aatattgaac agctcggag
360

!gattgggtg ggaagcccgc tccttgacaa ctggagagac aggttacatt ccagcaatt
420

!gtggctcc agttgactct atccaggcag aagagtggta ctttgaaaaa cttggccgaa
480

!gatgctga gcgacagcta ttgtcctttg gaaacccaag aggtaccttt cttatccgcg
540

!agtgaaac caccaaagggt gcctattcac tttctatccg tgattgggat gatatgaaag
600

!gaccatgt caaacattat aaaattcgca aacttgacaa tgggtggatac tacattacca
660

!cgggccca gtttgaaaca cttcagcagc ttgtacaaca ttactcagag aaagctgatg
720

!ttgtgttt taacttaact gtgattgcat cgagttgtac cccacaaact tctggattgg
780

!aaagatgc ttgggaagtt gcacgtcggt cgttgtgtct ggagaagaag ctgggtcagg
840

!tgtttcgc tgaagtgtgg cttggtacct ggaatggaaa cacaaaagta gccataaaga
900

!cttaaacc aggcacaatg tccccgaat cattccttga ggaagcgcag atcatgaaga
960

!ctgaagca cgacaagctg gtccagctct atgcagtggt gtctgaggag cccatctaca
1020

eolf-seql-S000001.txt

gtcaccga gtatatgaac aaaggaagtt tactggattt cttaaagat ggagaaggaa
1080

gctctgaa attaccaaat cttgtggaca tggcagcaca ggtggctgca ggaatggctt
1140

atcgagcg catgaattat atccatagag atctgcgac agcaaacatt ctagtgggga
1200

ggactcat atgcaagatt gctgacttcg gattggcccg attgatagaa gacaatgagt
1260

acagcaag acaaggtgca aagttcccca tcaagtggac ggcccccgag gcagccctgt
1320

gggaggtt cacaatcaag tctgacgtgt ggtcttttgg aatcttactc acagagctgg
1380

accaaaagg aagagtgcc aaccaggca tgaacaaccg ggaggtgctg gagcaggtgg
1440

cgaggcta caggatgcc tggccgcagg actgccccat ctctctgcat gagctcatga
1500

cactgctg gaaaaaggac cctgaagaac gcccacttt tgagtacttg cagagcttcc
1560

gaagacta ctttaccgcg acagagcccc agtaccaacc tggtgaaaac ctgtaaggcc
1620

ggtctgcg gagagaggcc ttgtcccaga ggctgcccc cccctcccca ttagctttca
1680

tccgtagc cagctgctcc ccagcagcgg aaccgcccag gatcagattg catgtgactc
1740

aagctgac gaacttccat ggccctcatt aatgacactt gtccccaaat ccgaacctcc
1800

tgtgaagc attcgagaca gaaccttggt atttctcaga ctttggaata tgcattgtat
1860

atggtatg taaaaggcca aacctctgtt cagtgtaaat agttactcca gtgccaacaa
1920

ctagtgtt ttcctttttt aaaaatgcaa atcctatgtg attttaactc tgtcttcacc
1980

attcaact aaaaaaaaaa aagtattatt ttccaaaagt ggcctctttg tctaaaacaa
2040

aaatTTTT tttcatgttt taacaaaaac caa
2073

eolf-seql-S000001.txt

```
:10> 91
:11> 2000
:12> DNA
:13> Homo sapiens

00> 91
gcgcgaggt ctgaggagct gagaagggag gcttacgtga agggaattta gataatgggc
 60

tgtgcaat gtaaggataa agaagcaaca aaactgacgg aggagagggga cggcagcctg
120

ccagagct ctgggtaccg ctatggcaca gaccccaccc ctcagcacta cccagcttc
180

tgtgacct ccatcccca a ctacaacaac ttccacgcag ccggggggcca aggactcacc
240

ctttggag gtgtgaactc ttcgtctcat acggggacct tgcgtacgag aggaggaaca
300

agtgacac tctttgtggc cctttatgac tatgaagcac ggacagaaga tgacctgagt
360

tcacaaag gagaaaaatt tcaaattattg aacagctcgg aaggagattg gtgggaagcc
420

ctccttga caactggaga gacaggttac attcccagca attatgtggc tccagttgac
480

tatccagg cagaagagtg gtactttgga aaacttggcc gaaaagatgc tgagcgacag
540

attgtcct ttggaaaccc aagaggtagc tttcttatcc gcgagagtga aaccacccaaa
600

tgcctatt cactttctat ccgtgattgg gatgatatga aaggagacca tgtcaaacat
660

taaaattc gcaaacttga caatggtgga tactacatta ccaccggggc ccagtttgaa
720

acttcagc agcttgtaca acattactca ggtacctgga atggaaacac aaaagtagcc
780

aaagactc ttaaaccagg cacaatgtcc cccgaatcat tccttgagga agcgagatc
840

gaagaagc tgaagcacga caagctggtc cagctctatg cagtgggtgtc tgaggagccc
900

ctacatcg tcaccgagta tatgaacaaa ggaagtttac tggatttctt aaaagatgga
960

aggaagag ctctgaaatt accaaatctt gtggacatgg cagcacaggt ggctgcagga
```

eolf-seql-S000001.txt

1020

ggcttaca tcgagcgcat gaattatata catagagatc tgcgatcagc aaacattcta
1080

ggggaatg gactcatatg caagattgct gacttcggat tggcccgatt gatagaagac
1140

tgagtaca cagcaagaca aggtgcaaag ttcccatca agtggaacggc ccccgaggca
1200

cctgtacg ggaggttcac aatcaagtct gacgtgtggt cttttggaat cttactcaca
1260

gctgggtca ccaaaggaag agtgccatac ccaggcatga acaaccggga ggtgctggag
1320

ggtaggagc gaggctacag gatgccctgc ccgcaggact gcccacatctc tctgcatgag
1380

catgatcc actgctggaa aaaggaccct gaagaacgcc ccacttttga gtacttgacg
1440

cttcctgg aagactactt taccgcgaca gagccccagt accaacctgg tgaaaacctg
1500

aggcccggt gtctgcggag agaggccttg tcccagaggc tgccccaccc ctccccatta
1560

tttcaatt ccgtagccag ctgctcccca gcagcggaac cgcccaggat cagattgcat
1620

gactctga agctgacgaa cttccatggc cctcattaat gacacttgct cccaaatccg
1680

cctcctct gtgaagcatt cgagacagaa ccttggttatt tctcagactt tggaaaatgc
1740

tgtatcga tgttatgtaa aaggccaaac ctctgttcag tgtaaatagt tactccagtg
1800

aacaatcc tagtgctttc cttttttaaa aatgcaaac ctatgtgatt ttaactctgt
1860

tcacctga ttcaactaaa aaaaaaaaaag tattattttc caaaagtggc ctctttgtct
1920

aacaataa aatttttttt catgttttaa caaaaaccaa aaaaaaaaaa aaaaaaaaaa
1980

aaaaaaaa aaaaaaaaaa
2000

10> 92

eolf-seql-S000001.txt

:11> 2349

:12> DNA

:13> Homo sapiens

100> 92

:tcttatcg gttcccatcc cagttgttga tcttatgcaa gacgctgcac gacccccgcg
60:gcttgtcg ccacggcact tgaggcagcc ggagatactc tgagttactc ggagccccgac
120:ctgagggg gagatgaacg cgctggcctc cctaaccgtc cggacctgtg atcgcttctg
180:agaccgaa ccggcgctcc tgcccccggg gtgacgcgca gccccagcc gccagacac
240:ggccccag gccaagcacc ccatcaggct accccgtgga gggatgcca ccttttctc
300:cctgtccc cagtgatggg cctcctcagc cgcgcctgga gccgcctgag gggcctggga
360:tctagagc cctggctggt ggaagcagta aaaggagcag ctctggtaga agctggcctg
420:gggagaag ctaggactcc tctggcaatc cccataccc ctggggcag acgccctgga
480:ggaggctg aagacagtgg aggccctgga gaggacagag aaacactggg gctgaaaacc
540:cagttccc ttcctgaagc ctggggactt ttggatgatg atgatggcat gtatggtgag
600:agaggcaa ccagtgtccc tagagggcag ggaagtcaat ttgcagatgg ccagcgtgct
660:cctgtctc ccagccttct gataaggaca ctgcaagggt ctgataagaa cccaggggag
720:gaaagccg aggaagaggg agttgctgaa gaggagggag ttaacaagtt ctcttatcca
780:atcacacc gggagtgttg tccagccgtg gaggaggagg acgatgaaga agctgtaaag
840:agaagctc acagaacctc tacttctgcc ttgtctccag gatccaagcc cagcacttgg
900:gtcttgcc caggggagga agagaatcaa gccacggagg ataaaagaac agaaagaagt
960:aggagcca ggaagacctc cgtgtccccc cgatcttcag gctccgaccc caggtcctgg
1020

eolf-seql-S000001.txt

agtatcgtt caggagagggc gtccgaggag aaggaggaaa aggcacacga agaaactggg
1080

aaggagaag ctgccccagg gccgcaatcc tcagccccag cccagaggcc ccagctcaag
1140

ctgtgtgtt gccaaaccag tgatgaagag gagagtgagg tcaagccttt gggggcagct
1200

agaaggatg gagaagctga gtgtcctccc tgcaccccc caccaagtgc ctctctgaag
1260

ctgtgtgtt attggccagg agaggacaca gaggaagagg aagatgagga agaagatgag
1320

acagtgact ctggatcaga tgaggaagag ggagaagctg aggcttcctc ttccactcct
1380

ctacaggtg tcttcttgaa gtctgtgggtc tatcagccag gagaggacac agaggaggag
1440

agatgagg acagtgatac aggatcagcc gaggatgaaa gagaagctga gacttctgct
1500

ccacacccc ctgcaagtgc tttcttgaag gcctgggtgt atcggccagg agaggacacg
1560

aggaggagg aagatgagga tgtggatagt gaggataagg aagatgattc agaagcagcc
1620

aaggagaag ctgagtcaga cccacatccc tcccaccgg accagagtgc ccacttcagg
1680

ctgtgggat atcgacctgg aaaagagaca gaggaagagg aagctgctga ggactgggga
1740

agctgagc cctgcccctt ccgagtggcc atctatgtac ctggagagaa gccaccgcct
1800

ctgtgggtc ctcttaggct gcccctccga ctgcaaaggc ggctcaagcg cccagaaacc
1860

tactcatg atccggaccc tgagactccc ctaaaggcca gaaaggtgcg ctctctccag
1920

ggtcactg tccatttcct ggctgtctgg gcagggccgg cccaggccgc ccgccagggc
1980

ctgggagc agcttgctcg ggatcgagc cgcttcgcac gccgcacgc ccaggcccag
2040

ggagctga gccctgcct caccctgct gcccgggcca gagcctgggc acgcctcagg
2100

eolf-seql-S000001.txt

ccacacctt tagcccccac cctgccctc acccagacct tgccttcctc ctctgtccct
2160

gtcccccag tccagaccac gcccttgagc caagctgtgg ctacaccttc ccgtcctct
2220

tgctgcag cggctgccct ggacctcagt gggaggcgtg gctgagacca actggtttgc
2280

ataattta ttaactattt attttttcta agtgtgggtt tatataagga ataaagcctt
2340

gatttgt
2349

10> 93
11> 3162
12> DNA
13> Homo sapiens

00> 93
gccctagc cctctttcgg ggatactggc cgacccctc ttccttttcc ccttttagtga
60

gcctcccc cgtcgccgcg cggtctcccg gagccgactg cagactccct cagcccggtg
120

ccccgcgt ccggacgccg aggtcgcggc ttcgcagaaa ctcgggcccc tccatccgcc
180

cagaaaag ggagcgatgt tgatctcagg aagcaciaag ggaccttcct agctctgact
240

accacgga gctcaccctg gacagtatca ctccgtggag gaagactgtg agactgtggc
300

gaagccag attgtagcca cacatccgcc cctgccctac ccagagccc tggagcagca
360

tggctgca gatcacagac acagtgagga tatgagtgtg ggggtgagca cctcagcccc
420

tttcccca acctcgggca caagcgtggg catgtctacc ttctccatca tggactatgt
480

tgttcgtc ctgctgctgg ttctctctct tgccattggg ctctaccatg cttgtcgtgg
540

ggggccgg catactgttg gtgagctgct gatggcggac cgcaaatgg gctgccttcc
600

tggcactg tccctgctgg ccaccttcca gtcagccgtg gccatcctgg gtgtgccgtc
660

eolf-seql-S000001.txt

jagatctac cgatttggga cccaatattg gttcctgggc tgctgctact ttctggggct
720

tgatacct gcacacatct tcatccccgt tttctaccgc ctgcatctca ccagtgccta
780

jagtacctg gagcttcgat tcaataaaac tgtgcgagtg tgtggaactg tgaccttcat
840

ttcagatg gtgatctaca tgggagttgt gctctatgct ccgtcattgg ctctcaatgc
900

tgactggc tttgatctgt ggctgtccgt gctggccctg ggcattgtct gtaccgtcta
960

cagctctg ggtgggctga aggccgtcat ctggacagat gtgttccaga cactgggtcat
1020

tcctcggg cagctggcag ttatcatcgt ggggtcagcc aagggtggcg gcttggggcg
1080

tgtgggcc gtggcttccc agcacggcgc catctctggg tttgagctgg atccagaccc
1140

ttgtgcgg cacaccttct ggaccttggc cttcgggggt gtcttcatga tgctctcctt
1200

acgggggtg aaccaggctc aggtgcagcg gtacctcagt tcccgcacgg agaaggctgc
1260

tgctctcc tgttatgcag tgttcccctt ccagcaggtg tccctctgcg tgggctgcct
1320

ttggcctg gtcatgttcg cgtattacca ggagtatccc atgagcattc agcaggctca
1380

cagcccca gaccagttcg tcctgtactt tgtgatggat ctctgaagg gcctgccagg
1440

tgccaggg ctcttcattg cctgcctctt cagcggctct ctcagacta tatcctctgc
1500

ttaattca ttggcaactg ttacgatgga agacctgatt cgaccttggg tcctgagtt
1560

ctgaagcc cgggccatca tgctttccag aggccttgcc tttggctatg ggctgctttg
1620

taggaatg gcctatatatt cctcccagat gggacctgtg ctgcaggcag caatcagcat
1680

ttggcatg gttgggggac cgctgctggg actcttctgc cttggaatgt tctttccatg
1740

ctaaccct cctgggtgctg ttgtgggcct gttggctggg ctcgatcatgg ccttctggat

eolf-seql-S000001.txt

1800

igcatcggg agcatcgtga ccagcatggg cttcagcatg ccaccctctc cctctaattg
1860

ccagcttc tccctgcccc ccaatctaac cgttgccact gtgaccacac tgatgccctt
1920

ctaccttc tccaagcccc cagggtgca gcggttctat tccttgtctt acttatggta
1980

gtgctcac aactccacca cagtgattgt ggtgggcctg attgtcagtc tactcactgg
2040

gaatgcga ggccggtccc tgaacctgc aaccatttac ccagtgttg caaagctcct
2100

ccctcctt ccgttgctct gtcagaagcg gtcacctgc aggagctacg gccaggacca
2160

tcgacact ggctgtttc ctgagaagcc gaggaatgt gtgctggggg acagcagaga
2220

aggaggcc atggccctgg atggcacagc ctatcagggg agcagctcca cctgcaccc
2280

aggagacc tccctgtgat gttgactcag gaccccgct ctgtcctcac tgtgccaggc
2340

tagccaga ggccaccctg tagtacaggg atgagtcttg gtgtgttctg cagggaacagg
2400

tggatgat ctagctcata ccaaaggacc ttgttctgag aggttcttgc ctgcaggaga
2460

ctgtcaca tctcaagcat gtgaggcacc gtttttctcg tcgcttgcca atctgttttt
2520

aaggatca ggctcgtagg gagcaggatc atgccagaaa tagggatgga agtgcaccc
2580

gggaaaaa gataatggct tctgattcaa catagccata gtcctttgaa gtaagtggct
2640

aaacagca ctctgggtat aattgcccc gggcctgatt caggactgac tctccaccat
2700

aactggaa gctgcttccc ctgtagtccc catttcagta ccagttctgc cagccacagt
2760

gccctat tattactttc agattgtctg tgacactcaa gccctctca tttttatctg
2820

tacctcca ttctgaagag ggagggtttg gtgtccctgg tcctctggga atagaagatc
2880

eolf-seq1-S000001.txt

atttgtctt tgtgtagagc aagcacgttt tccacctcac tgtctccatc ctccacctct
2940

agatggaca cttaagagac ggggcaaattg tggatccaag aaaccagggc catgaccagg
3000

scactgtgg agcagccatc tatctacctg actcctgagc caggctgccg tgggtgtcatt
3060

ctgtcatcc gtgctctgtt tccttttgga gtttcttctc cacattatct ttgttcctgg
3120

gaataaaaa ctaccattgg acctaaaaaa aaaaaaaaaa aa
3162

!10> 94
!11> 20
!12> DNA
!13> Homo sapiens

!00> 94
acatcgct cagacaccat
20

!10> 95
!11> 17
!12> DNA
!13> Homo sapiens

!00> 95
caggcgcc caatacg
17

!10> 96
!11> 28
!12> DNA
!13> Homo sapiens

!00> 96
aatccggtt gactccgacc ttcacctt
28

!10> 97
!11> 20
!12> DNA
!13> Homo sapiens

!00> 97
ggccaacc gcgagaagat
20

eolf-seql-S000001.txt

```
10> 98
11> 20
12> DNA
13> Homo sapiens
```

```
00> 98
caccggag tccatcacga
20
```

```
10> 99
11> 32
12> DNA
13> Homo sapiens
```

```
00> 99
atgtacgt tgctatccag gctgtgctat cc
32
```

```
10> 100
11> 25
12> DNA
13> Homo sapiens
```

```
00> 100
actgggac gacatggaga aaatc
25
```

```
10> 101
11> 22
12> DNA
13> Homo sapiens
```

```
00> 101
tggctggg gtgttgaagg tc
22
```

```
10> 102
11> 21
12> DNA
13> Homo sapiens
```

```
00> 102
gaggacaa aataactacc c
21
```

```
10> 103
11> 22
12> DNA
```

eolf-seql-S000001.txt

13> Homo sapiens

100> 103

aattcagga gctttttctt ca
22

10> 104

11> 22

12> DNA

13> Homo sapiens

100> 104

aattcagga gctttttctt ca
22

10> 105

11> 32

12> DNA

13> Homo sapiens

100> 105

ctgggctg agaaactgat ggactgggct ga
32

10> 106

11> 23

12> DNA

13> Homo sapiens

100> 106

ggaaaggt cactgaaaaa tct
23

10> 107

11> 21

12> PRT

13> Homo sapiens

100> 107

y Cys Thr Gly Gly Cys Thr Gly Cys Gly Gly Thr Thr Gly Ala Ala
5 10 15y Thr Thr Gly Gly
20

10> 108

11> 17

12> DNA

eolf-seql-S000001.txt

:13> Homo sapiens

:00> 108

:gcgggcta cgacctg

17

:10> 109

:11> 20

:12> DNA

:13> Homo sapiens

:00> 109

:ccactctt ccataacacc

20

:10> 110

:11> 32

:12> DNA

:13> Homo sapiens

:00> 110

:tccgtttt cacaacagct ttctccatag gt

32

:10> 111

:11> 16

:12> DNA

:13> Homo sapiens

:00> 111

:aaaacgac ggccag

16

:10> 112

:11> 17

:12> DNA

:13> Homo sapiens

:00> 112

:ggaaacag ctatgac

17

:10> 113

:11> 479

:12> PRT

:13> Homo sapiens

:00> 113

: Asp Glu Thr Ser Pro Leu Val Ser Pro Glu Arg Ala Gln Pro Pro

eolf-seql-S000001.txt

5

10

15

sp Tyr Thr Phe Pro Ser Gly Ser Gly Ala His Phe Pro Gln Val Pro
 20 25 30

y Gly Ala Val Arg Val Ala Ala Ala Ala Gly Ser Gly Pro Ser Pro
 35 40 45

o Gly Ser Pro Gly His Asp Arg Glu Arg Gln Pro Leu Leu Asp Arg
 50 55 60

a Arg Gly Ala Ala Ala Gln Gly Gln Thr Gln Thr Val Ala Ala Gln
 70 75 80

a Gln Ala Leu Ala Ala Gln Ala Ala Ala Ala His Ala Ala Gln
 85 90 95

a His Arg Glu Arg Asn Glu Phe Pro Glu Asp Pro Glu Phe Glu Ala
 100 105 110

l Val Arg Gln Ala Glu Leu Ala Ile Glu Arg Cys Ile Phe Pro Glu
 115 120 125

g Ile Tyr Gln Gly Ser Ser Gly Ser Tyr Phe Val Lys Asp Pro Gln
 130 135 140

y Arg Ile Ile Ala Val Phe Lys Pro Lys Asn Glu Glu Pro Tyr Gly
 5 150 155 160

s Leu Asn Pro Lys Trp Thr Lys Trp Leu Gln Lys Leu Cys Cys Pro
 165 170 175

s Cys Phe Gly Arg Asp Cys Leu Val Leu Asn Gln Gly Tyr Leu Ser
 180 185 190

u Ala Gly Ala Ser Leu Val Asp Gln Lys Leu Glu Leu Asn Ile Val
 195 200 205

o Arg Thr Lys Val Val Tyr Leu Ala Ser Glu Thr Phe Asn Tyr Ser
 210 215 220

eolf-seql-S000001.txt

```

la Ile Asp Arg Val Lys Ser Arg Gly Lys Arg Leu Ala Leu Glu Lys
25                230                235                240

al Pro Lys Val Gly Gln Arg Phe Asn Arg Ile Gly Leu Pro Pro Lys
                245                250                255

al Gly Ser Phe Gln Leu Phe Val Glu Gly Tyr Lys Asp Ala Asp Tyr
                260                265                270

p Leu Arg Arg Phe Glu Ala Glu Pro Leu Pro Glu Asn Thr Asn Arg
275                280                285

n Leu Leu Leu Gln Phe Glu Arg Leu Val Val Leu Asp Tyr Ile Ile
290                295                300

g Asn Thr Asp Arg Gly Asn Asp Asn Trp Leu Ile Lys Tyr Asp Cys
35                310                315                320

o Met Asp Ser Ser Ser Ser Arg Asp Thr Asp Trp Val Val Val Lys
                325                330                335

u Pro Val Ile Lys Val Ala Ala Ile Asp Asn Gly Leu Ala Phe Pro
                340                345                350

u Lys His Pro Asp Ser Trp Arg Ala Tyr Pro Phe Tyr Trp Ala Trp
355                360                365

u Pro Gln Ala Lys Val Pro Phe Ser Gln Glu Ile Lys Asp Leu Ile
370                375                380

u Pro Lys Ile Ser Asp Pro Asn Phe Val Lys Asp Leu Glu Glu Asp
5                390                395                400

u Tyr Glu Leu Phe Lys Lys Asp Pro Gly Phe Asp Arg Gly Gln Phe
                405                410                415

s Lys Gln Ile Ala Val Met Arg Gly Gln Ile Leu Asn Leu Thr Gln
                420                425                430

a Leu Lys Asp Asn Lys Ser Pro Leu His Leu Val Gln Met Pro Pro
435                440                445

```


eolf-seql-S000001.txt

al Ile Val Glu Thr Ala Arg Ser His Gln Arg Ser Ser Ser Glu Ser
450 455 460

yr Thr Gln Ser Phe Gln Ser Arg Lys Pro Phe Phe Ser Trp Trp
55 470 475

210> 114

211> 213

212> PRT

213> Homo sapiens

400> 114

et Ala Gln Glu Thr Asn Gln Thr Pro Gly Pro Met Leu Cys Ser Thr
5 10 15

y Cys Gly Phe Tyr Gly Asn Pro Arg Thr Asn Gly Met Cys Ser Val
20 25 30

's Tyr Lys Glu His Leu Gln Arg Gln Gln Asn Ser Gly Arg Met Ser
35 40 45

o Met Gly Thr Ala Ser Gly Ser Asn Ser Pro Thr Ser Asp Ser Ala
50 55 60

er Val Gln Arg Ala Asp Thr Ser Leu Asn Asn Cys Glu Gly Ala Ala
70 75 80

y Ser Thr Ser Glu Lys Ser Arg Asn Val Pro Val Ala Ala Leu Pro
85 90 95

l Thr Gln Gln Met Thr Glu Met Ser Ile Ser Arg Glu Asp Lys Ile
100 105 110

r Thr Pro Lys Thr Glu Val Ser Glu Pro Val Val Thr Gln Pro Ser
115 120 125

o Ser Val Ser Gln Pro Ser Thr Ser Gln Ser Glu Glu Lys Ala Pro
130 135 140

u Leu Pro Lys Pro Lys Lys Asn Arg Cys Phe Met Cys Arg Lys Lys
5 150 155 160

eolf-seql-S000001.txt

al Gly Leu Thr Gly Phe Asp Cys Arg Cys Gly Asn Leu Phe Cys Gly
 165 170 175

au His Arg Tyr Ser Asp Lys His Asn Cys Pro Tyr Asp Tyr Lys Ala
 180 185 190

lu Ala Ala Ala Lys Ile Arg Lys Glu Asn Pro Val Val Val Ala Glu
 195 200 205

ys Ile Gln Arg Ile
 210

210> 115

211> 323

212> PRT

213> Homo sapiens

100> 115

et Asp Ser Lys Tyr Gln Cys Val Lys Leu Asn Asp Gly His Phe Met
 5 10 15

o Val Leu Gly Phe Gly Thr Tyr Ala Pro Ala Glu Val Pro Lys Ser
 20 25 30

rs Ala Leu Glu Ala Thr Lys Leu Ala Ile Glu Ala Gly Phe Arg His
 35 40 45

e Asp Ser Ala His Leu Tyr Asn Asn Glu Glu Gln Val Gly Leu Ala
 50 55 60

e Arg Ser Lys Ile Ala Asp Gly Ser Val Lys Arg Glu Asp Ile Phe
 70 75 80

r Thr Ser Lys Leu Trp Cys Asn Ser His Arg Pro Glu Leu Val Arg
 85 90 95

o Ala Leu Glu Arg Ser Leu Lys Asn Leu Gln Leu Asp Tyr Val Asp
 100 105 110

u Tyr Leu Ile His Phe Pro Val Ser Val Lys Pro Gly Glu Glu Val
 115 120 125

eolf-seql-S000001.txt

```

e Pro Lys Asp Glu Asn Gly Lys Ile Leu Phe Asp Thr Val Asp Leu
  130                135                140

s Ala Thr Trp Glu Ala Val Glu Lys Cys Lys Asp Ala Gly Leu Ala
  5                150                155                160

s Ser Ile Gly Val Ser Asn Phe Asn Arg Arg Gln Leu Glu Met Ile
                165                170                175

u Asn Lys Pro Gly Leu Lys Tyr Lys Pro Val Cys Asn Gln Val Glu
                180                185                190

s His Pro Tyr Phe Asn Gln Arg Lys Leu Leu Asp Phe Cys Lys Ser
                195                200                205

s Asp Ile Val Leu Val Ala Tyr Ser Ala Leu Gly Ser His Arg Glu ...
  210                215                220

u Pro Trp Val Asp Pro Asn Ser Pro Val Leu Leu Glu Asp Pro Val
  5                230                235                240

u Cys Ala Leu Ala Lys Lys His Lys Arg Thr Pro Ala Leu Ile Ala
                245                250                255

u Arg Tyr Gln Leu Gln Arg Gly Val Val Val Leu Ala Lys Ser Tyr
                260                265                270

u Glu Gln Arg Ile Arg Gln Asn Val Gln Val Phe Glu Phe Gln Leu
                275                280                285

r Ser Glu Glu Met Lys Ala Ile Asp Gly Leu Asn Arg Asn Val Arg
  290                295                300

r Leu Thr Leu Asp Ile Phe Ala Gly Pro Pro Asn Tyr Pro Phe Ser
  5                310                315                320

o Glu Tyr

```

.0> 116

.1> 164

eolf-seql-S000001.txt

12> PRT

13> Homo sapiens

00> 116

t Pro Cys Ser Glu Glu Thr Pro Ala Ile Ser Pro Ser Lys Arg Ala
 5 10 15

g Pro Ala Glu Val Gly Gly Met Gln Leu Arg Phe Ala Arg Leu Ser
 20 25 30

u His Ala Thr Ala Pro Thr Arg Gly Ser Ala Arg Ala Ala Gly Tyr
 35 40 45

p Leu Tyr Ser Ala Tyr Asp Tyr Thr Ile Pro Pro Met Glu Lys Ala
 50 55 60

l Val Lys Thr Asp Ile Gln Ile Ala Leu Pro Ser Gly Cys Tyr Gly
 70 75 80

g Val Ala Pro Arg Ser Gly Leu Ala Ala Lys His Phe Ile Asp Val
 85 90 95

y Ala Gly Val Ile Asp Glu Asp Tyr Arg Gly Asn Val Gly Val Val
 100 105 110

u Phe Asn Phe Gly Lys Glu Lys Phe Glu Val Lys Lys Gly Asp Arg
 115 120 125

e Ala Gln Leu Ile Cys Glu Arg Ile Phe Tyr Pro Glu Ile Glu Glu
 130 135 140

l Gln Ala Leu Asp Asp Thr Glu Arg Gly Ser Gly Gly Phe Gly Ser
 5 150 155 160

r Gly Lys Asn

10> 117

11> 969

12> PRT

13> Homo sapiens

10> 117

eolf-seql-S000001.txt

```

et Pro Pro Arg Ala Pro Pro Ala Pro Gly Pro Arg Pro Pro Pro Arg
      5              10              15

a Ala Ala Ala Thr Asp Thr Ala Ala Gly Ala Gly Gly Ala Gly Gly
      20              25              30

a Gly Gly Ala Gly Gly Pro Gly Phe Arg Pro Leu Ala Pro Arg Pro
      35              40              45

p Arg Trp Leu Leu Leu Leu Ala Leu Pro Ala Ala Cys Ser Ala Pro
      50              55              60

o Pro Arg Pro Val Tyr Thr Asn His Trp Ala Val Gln Val Leu Gly
      70              75              80

y Pro Ala Glu Ala Asp Arg Val Ala Ala Ala His Gly Tyr Leu Asn . . . .
      85              90              95

u Gly Gln Ile Gly Asn Leu Glu Asp Tyr Tyr His Phe Tyr His Ser
      100             105             110

s Thr Phe Lys Arg Ser Thr Leu Ser Ser Arg Gly Pro His Thr Phe
      115             120             125

u Arg Met Asp Pro Gln Val Lys Trp Leu Gln Gln Gln Glu Val Lys
      130             135             140

g Arg Val Lys Arg Gln Val Arg Ser Asp Pro Gln Ala Leu Tyr Phe
      150             155             160

n Asp Pro Ile Trp Ser Asn Met Trp Tyr Leu His Cys Gly Asp Lys
      165             170             175

n Ser Arg Cys Arg Ser Glu Met Asn Val Gln Ala Ala Trp Lys Arg
      180             185             190

y Tyr Thr Gly Lys Asn Val Val Val Thr Ile Leu Asp Asp Gly Ile
      195             200             205

u Arg Asn His Pro Asp Leu Ala Pro Asn Tyr Asp Ser Tyr Ala Ser
      210             215             220

```

eolf-seql-S000001.txt

25 Asp Val Asn Gly Asn Asp Tyr Asp Pro Ser Pro Arg Tyr Asp Ala
230 235 240

er Asn Glu Asn Lys His Gly Thr Arg Cys Ala Gly Glu Val Ala Ala
245 250 255

er Ala Asn Asn Ser Tyr Cys Ile Val Gly Ile Ala Tyr Asn Ala Lys
260 265 270

le Gly Gly Ile Arg Met Leu Asp Gly Asp Val Thr Asp Val Val Glu
275 280 285

la Lys Ser Leu Gly Ile Arg Pro Asn Tyr Ile Asp Ile Tyr Ser Ala
290 295 300

er Trp Gly Pro Asp Asp Asp Gly Lys Thr Val Asp Gly Pro Gly Arg
310 315 320

u Ala Lys Gln Ala Phe Glu Tyr Gly Ile Lys Lys Gly Arg Gln Gly
325 330 335

u Gly Ser Ile Phe Val Trp Ala Ser Gly Asn Gly Gly Arg Glu Gly
340 345 350

p Tyr Cys Ser Cys Asp Gly Tyr Thr Asn Ser Ile Tyr Thr Ile Ser
355 360 365

l Ser Ser Ala Thr Glu Asn Gly Tyr Lys Pro Trp Tyr Leu Glu Glu
370 375 380

s Ala Ser Thr Leu Ala Thr Thr Tyr Ser Ser Gly Ala Phe Tyr Glu
390 395 400

g Lys Ile Val Thr Thr Asp Leu Arg Gln Arg Cys Thr Asp Gly His
405 410 415

r Gly Thr Ser Val Ser Ala Pro Met Val Ala Gly Ile Ile Ala Leu
420 425 430

a Leu Glu Ala Asn Ser Gln Leu Thr Trp Arg Asp Val Gln His Leu

eolf-seql-S000001.txt

435

440

445

u Val Lys Thr Ser Arg Pro Ala His Leu Lys Ala Ser Asp Trp Lys
 450 455 460

l Asn Gly Ala Gly His Lys Val Ser His Phe Tyr Gly Phe Gly Leu
 465 470 475 480

l Asp Ala Glu Ala Leu Val Val Glu Ala Lys Lys Trp Thr Ala Val
 485 490 495

o Ser Gln His Met Cys Val Ala Ala Ser Asp Lys Arg Pro Arg Ser
 500 505 510

e Pro Leu Val Gln Val Leu Arg Thr Thr Ala Leu Thr Ser Ala Cys
 515 520 525

a Glu His Ser Asp Gln Arg Val Val Tyr Leu Glu His Val Val Val
 530 535 540

g Thr Ser Ile Ser His Pro Arg Arg Gly Asp Leu Gln Ile Tyr Leu
 545 550 555 560

l Ser Pro Ser Gly Thr Lys Ser Gln Leu Leu Ala Lys Arg Leu Leu
 565 570 575

p Leu Ser Asn Glu Gly Phe Thr Asn Trp Glu Phe Met Thr Val His
 580 585 590

s Trp Gly Glu Lys Ala Glu Gly Gln Trp Thr Leu Glu Ile Gln Asp
 595 600 605

u Pro Ser Gln Val Arg Asn Pro Glu Lys Gln Gly Lys Leu Lys Glu
 610 615 620

p Ser Leu Ile Leu Tyr Gly Thr Ala Glu His Pro Tyr His Thr Phe
 630 635 640

r Ala His Gln Ser Arg Ser Arg Met Leu Glu Leu Ser Ala Pro Glu
 645 650 655

eolf-seql-S000001.txt

```

au Glu Pro Pro Lys Ala Ala Leu Ser Pro Ser Gln Val Glu Val Pro
    660                                665                                670

u Asp Glu Glu Asp Tyr Thr Ala Gln Ser Thr Pro Gly Ser Ala Asn
    675                                680                                685

e Leu Gln Thr Ser Val Cys His Pro Glu Cys Gly Asp Lys Gly Cys
    690                                695                                700

p Gly Pro Asn Ala Asp Gln Cys Leu Asn Cys Val His Phe Ser Leu
    705                                710                                715                                720

y Ser Val Lys Thr Ser Arg Lys Cys Val Ser Val Cys Pro Leu Gly
    725                                730                                735

r Phe Gly Asp Thr Ala Ala Arg Arg Cys Arg Arg Cys His Lys Gly
    740                                745                                750

s Glu Thr Cys Ser Ser Arg Ala Ala Thr Gln Cys Leu Ser Cys Arg
    755                                760                                765

g Gly Phe Tyr His His Gln Glu Met Asn Thr Cys Val Thr Leu Cys
    770                                775                                780

o Ala Gly Phe Tyr Ala Asp Glu Ser Gln Lys Asn Cys Leu Lys Cys
    785                                790                                795                                800

s Pro Ser Cys Lys Lys Cys Val Asp Glu Pro Glu Lys Cys Thr Val
    805                                810                                815

s Lys Glu Gly Phe Ser Leu Ala Arg Gly Ser Cys Ile Pro Asp Cys
    820                                825                                830

u Pro Gly Thr Tyr Phe Asp Ser Glu Leu Ile Arg Cys Gly Glu Cys
    835                                840                                845

s His Thr Cys Gly Thr Cys Val Gly Pro Gly Arg Glu Glu Cys Ile
    850                                855                                860

s Cys Ala Lys Asn Phe His Phe His Asp Trp Lys Cys Val Pro Ala
    865                                870                                875                                880

```


eolf-seql-S000001.txt

's Gly Glu Gly Phe Tyr Pro Glu Glu Met Pro Gly Leu Pro His Lys
885 890 895

l Cys Arg Arg Cys Asp Glu Asn Cys Leu Ser Cys Ala Gly Ser Ser
900 905 910

g Asn Cys Ser Arg Cys Lys Thr Gly Phe Thr Gln Leu Gly Thr Ser
915 920 925

's Ile Thr Asn His Thr Cys Ser Asn Ala Asp Glu Thr Phe Cys Glu
930 935 940

t Val Lys Ser Asn Arg Leu Cys Glu Arg Lys Leu Phe Ile Gln Phe
5 950 955 960

s Cys Arg Thr Cys Leu Leu Ala Gly
965

10> 118

11> 683

12> PRT

13> Homo sapiens

00> 118

t Ala Leu Phe Val Arg Leu Leu Ala Leu Ala Leu Ala Leu Ala Leu
5 10 15

y Pro Ala Ala Thr Leu Ala Gly Pro Ala Lys Ser Pro Tyr Gln Leu
20 25 30

l Leu Gln His Ser Arg Leu Arg Gly Arg Gln His Gly Pro Asn Val
35 40 45

s Ala Val Gln Lys Val Ile Gly Thr Asn Arg Lys Tyr Phe Thr Asn
50 55 60

s Lys Gln Trp Tyr Gln Arg Lys Ile Cys Gly Lys Ser Thr Val Ile
70 75 80

r Tyr Glu Cys Cys Pro Gly Tyr Glu Lys Val Pro Gly Glu Lys Gly
85 90 95

eolf-seql-S000001.txt

ys Pro Ala Ala Leu Pro Leu Ser Asn Leu Tyr Glu Thr Leu Gly Val
 100 105 110

al Gly Ser Thr Thr Thr Gln Leu Tyr Thr Asp Arg Thr Glu Lys Leu
 115 120 125

g Pro Glu Met Glu Gly Pro Gly Ser Phe Thr Ile Phe Ala Pro Ser
 130 135 140

sn Glu Ala Trp Ala Ser Leu Pro Ala Glu Val Leu Asp Ser Leu Val
 15 150 155 160

er Asn Val Asn Ile Glu Leu Leu Asn Ala Leu Arg Tyr His Met Val
 165 170 175

y Arg Arg Val Leu Thr Asp Glu Leu Lys His Gly Met Thr Leu Thr
 180 185 190

er Met Tyr Gln Asn Ser Asn Ile Gln Ile His His Tyr Pro Asn Gly
 195 200 205

e Val Thr Val Asn Cys Ala Arg Leu Leu Lys Ala Asp His His Ala
 210 215 220

r Asn Gly Val Val His Leu Ile Asp Lys Val Ile Ser Thr Ile Thr
 5 230 235 240

n Asn Ile Gln Gln Ile Ile Glu Ile Glu Asp Thr Phe Glu Thr Leu
 245 250 255

g Ala Ala Val Ala Ala Ser Gly Leu Asn Thr Met Leu Glu Gly Asn
 260 265 270

y Gln Tyr Thr Leu Leu Ala Pro Thr Asn Glu Ala Phe Glu Lys Ile
 275 280 285

o Ser Glu Thr Leu Asn Arg Ile Leu Gly Asp Pro Glu Ala Leu Arg
 290 295 300

p Leu Leu Asn Asn His Ile Leu Lys Ser Ala Met Cys Ala Glu Ala
 5 310 315 320

eolf-seql-S000001.txt

```

le Val Ala Gly Leu Ser Val Glu Thr Leu Glu Gly Thr Thr Leu Glu
      325                      330                      335

al Gly Cys Ser Gly Asp Met Leu Thr Ile Asn Gly Lys Ala Ile Ile
      340                      345                      350

er Asn Lys Asp Ile Leu Ala Thr Asn Gly Val Ile His Tyr Ile Asp
      355                      360                      365

lu Leu Leu Ile Pro Asp Ser Ala Lys Thr Leu Phe Glu Leu Ala Ala
      370                      375                      380

lu Ser Asp Val Ser Thr Ala Ile Asp Leu Phe Arg Gln Ala Gly Leu
85      390                      395                      400

y Asn His Leu Ser Gly Ser Glu Arg Leu Thr Leu Leu Ala Pro Leu
      405                      410                      415

n Ser Val Phe Lys Asp Gly Thr Pro Pro Ile Asp Ala His Thr Arg
      420                      425                      430

n Leu Leu Arg Asn His Ile Ile Lys Asp Gln Leu Ala Ser Lys Tyr
      435                      440                      445

u Tyr His Gly Gln Thr Leu Glu Thr Leu Gly Gly Lys Lys Leu Arg
      450                      455                      460

l Phe Val Tyr Arg Asn Ser Leu Cys Ile Glu Asn Ser Cys Ile Ala
5      470                      475                      480

a His Asp Lys Arg Gly Arg Tyr Gly Thr Leu Phe Thr Met Asp Arg
      485                      490                      495

l Leu Thr Pro Pro Met Gly Thr Val Met Asp Val Leu Lys Gly Asp
      500                      505                      510

n Arg Phe Ser Met Leu Val Ala Ala Ile Gln Ser Ala Gly Leu Thr
      515                      520                      525

u Thr Leu Asn Arg Glu Gly Val Tyr Thr Val Phe Ala Pro Thr Asn

```

eolf-seql-S000001.txt

530

535

540

lu Ala Phe Arg Ala Leu Pro Pro Arg Glu Arg Ser Arg Leu Leu Gly
 15 550 555 560

sp Ala Lys Glu Leu Ala Asn Ile Leu Lys Tyr His Ile Gly Asp Glu
 565 570 575

le Leu Val Ser Gly Gly Ile Gly Ala Leu Val Arg Leu Lys Ser Leu
 580 585 590

ln Gly Asp Lys Leu Glu Val Ser Leu Lys Asn Asn Val Val Ser Val
 595 600 605

sn Lys Glu Pro Val Ala Glu Pro Asp Ile Met Ala Thr Asn Gly Val
 610 615 620

al His Val Ile Thr Asn Val Leu Gln Pro Pro Ala Asn Arg Pro Gln
 630 635 640

u Arg Gly Asp Glu Leu Ala Asp Ser Ala Leu Glu Ile Phe Lys Gln
 645 650 655

a Ser Ala Phe Ser Arg Ala Ser Gln Arg Ser Val Arg Leu Ala Pro
 660 665 670

l Tyr Gln Lys Leu Leu Glu Arg Met Lys His
 675 680

10> 119

11> 381

12> PRT

13> Homo sapiens

00> 119

t Glu Ser Gly Ser Thr Ala Ala Ser Glu Glu Ala Arg Ser Leu Arg
 5 10 15

u Cys Glu Leu Tyr Val Gln Lys His Asn Ile Gln Ala Leu Leu Lys
 20 25 30

p Ser Ile Val Gln Leu Cys Thr Ala Arg Pro Glu Arg Pro Met Ala

eolf-seql-S000001.txt

```

35                                40                                45

ie Leu Arg Glu Tyr Phe Glu Arg Leu Glu Lys Glu Glu Ala Lys Gln
50                                55                                60

.e Gln Asn Leu Gln Lys Ala Gly Thr Arg Thr Asp Ser Arg Glu Asp
;                                70                                75                                80

.u Ile Ser Pro Pro Pro Pro Asn Pro Val Val Lys Gly Arg Arg Arg
85                                90                                95

g Gly Ala Ile Ser Ala Glu Val Tyr Thr Glu Glu Asp Ala Ala Ser
100                                105                                110

r Val Arg Lys Val Ile Pro Lys Asp Tyr Lys Thr Met Ala Ala Leu
115                                120                                125

a Lys Ala Ile Glu Lys Asn Val Leu Phe Ser His Leu Asp Asp Asn
130                                135                                140

u Arg Ser Asp Ile Phe Asp Ala Met Phe Ser Val Ser Phe Ile Ala
5                                150                                155                                160

y Glu Thr Val Ile Gln Gln Gly Asp Glu Gly Asp Asn Phe Tyr Val
165                                170                                175

e Asp Gln Gly Glu Thr Asp Val Tyr Val Asn Asn Glu Trp Ala Thr
180                                185                                190

r Val Gly Glu Gly Gly Ser Phe Gly Glu Leu Ala Leu Ile Tyr Gly
195                                200                                205

r Pro Arg Ala Ala Thr Val Lys Ala Lys Thr Asn Val Lys Leu Trp
210                                215                                220

y Ile Asp Arg Asp Ser Tyr Arg Arg Ile Leu Met Gly Ser Thr Leu
5                                230                                235                                240

g Lys Arg Lys Met Tyr Glu Glu Phe Leu Ser Lys Val Ser Ile Leu
245                                250                                255

```

eolf-seql-S000001.txt

lu Ser Leu Asp Lys Trp Glu Arg Leu Thr Val Ala Asp Ala Leu Glu
 260 265 270

co Val Gln Phe Glu Asp Gly Gln Lys Ile Val Val Gln Gly Glu Pro
 275 280 285

ly Asp Glu Phe Phe Ile Ile Leu Glu Gly Ser Ala Ala Val Leu Gln
 290 295 300

rg Arg Ser Glu Asn Glu Glu Phe Val Glu Val Gly Arg Leu Gly Pro
 305 310 315 320

er Asp Tyr Phe Gly Glu Ile Ala Leu Leu Met Asn Arg Pro Arg Ala
 325 330 335

la Thr Val Val Ala Arg Gly Pro Leu Lys Cys Val Lys Leu Asp Arg
 340 345 350

co Arg Phe Glu Arg Val Leu Gly Pro Cys Ser Asp Ile Leu Lys Arg
 355 360 365

on Ile Gln Gln Tyr Asn Ser Phe Val Ser Leu Ser Val
 370 375 380

10> 120
 11> 245
 12> PRT
 13> Homo sapiens

00> 120

t Asn Gly Arg Ala Asp Phe Arg Glu Pro Asn Ala Glu Val Pro Arg
 5 10 15

o Ile Pro His Ile Gly Pro Asp Tyr Ile Pro Thr Glu Glu Glu Arg
 20 25 30

g Val Phe Ala Glu Cys Asn Asp Glu Ser Phe Trp Phe Arg Ser Val
 35 40 45

o Leu Ala Ala Thr Ser Met Leu Ile Thr Gln Gly Leu Ile Ser Lys
 50 55 60

eolf-seql-S000001.txt

y Ile Leu Ser Ser His Pro Lys Tyr Gly Ser Ile Pro Lys Leu Ile
 70 75 80

u Ala Cys Ile Met Gly Tyr Phe Ala Gly Lys Leu Ser Tyr Val Lys
 85 90 95

r Cys Gln Glu Lys Phe Lys Lys Leu Glu Asn Ser Pro Leu Gly Glu
 100 105 110

a Leu Arg Ser Gly Gln Ala Arg Arg Ser Ser Pro Pro Gly His Tyr
 115 120 125

r Gln Lys Ser Lys Tyr Asp Ser Ser Val Ser Gly Gln Ser Ser Phe
 130 135 140

l Thr Ser Pro Ala Ala Asp Asn Ile Glu Met Leu Pro His Tyr Glu
 5 150 155 160

o Ile Pro Phe Ser Ser Ser Met Asn Glu Ser Ala Pro Thr Gly Ile
 165 170 175

r Asp His Ile Val Gln Gly Pro Asp Pro Asn Leu Glu Glu Ser Pro
 180 185 190

s Arg Lys Asn Ile Thr Tyr Glu Glu Leu Arg Asn Lys Asn Arg Glu
 195 200 205

r Tyr Glu Val Ser Leu Thr Gln Lys Thr Asp Pro Ser Val Arg Pro
 210 215 220

t His Glu Arg Val Pro Lys Lys Glu Val Lys Val Asn Lys Tyr Gly
 5 230 235 240

p Thr Trp Asp Glu
 245

10> 121

11> 359

12> PRT

13> Homo sapiens

30> 121

eolf-seql-S000001.txt

```

et Ser Thr Arg Ala Lys Lys Leu Arg Arg Ile Trp Arg Ile Leu Glu
   5                               10                               15

lu Glu Glu Ser Val Ala Gly Ala Val Gln Thr Leu Leu Leu Arg Ser
   20                               25                               30

n Glu Gly Gly Val Thr Ser Ala Ala Ala Ser Thr Leu Ser Glu Pro
   35                               40                               45

o Arg Arg Thr Gln Glu Ser Arg Thr Arg Thr Arg Ala Leu Gly Leu
   50                               55                               60

o Thr Leu Pro Met Glu Lys Leu Ala Ala Ser Thr Glu Pro Gln Gly
   70                               75                               80

o Arg Pro Val Leu Gly Arg Glu Ser Val Gln Val Pro Asp Asp Gln
   85                               90                               95

p Phe Arg Ser Phe Arg Ser Glu Cys Glu Ala Glu Val Gly Trp Asn
  100                               105                               110

u Thr Tyr Ser Arg Ala Gly Val Ser Val Trp Val Gln Ala Val Glu
  115                               120                               125

t Asp Arg Thr Leu His Lys Ile Lys Cys Arg Met Glu Cys Cys Asp
  130                               135                               140

l Pro Ala Glu Thr Leu Tyr Asp Val Leu His Asp Ile Glu Tyr Arg
  150                               155                               160

s Lys Trp Asp Ser Asn Val Ile Glu Thr Phe Asp Ile Ala Arg Leu
  165                               170                               175

r Val Asn Ala Asp Val Gly Tyr Tyr Ser Trp Arg Cys Pro Lys Pro
  180                               185                               190

u Lys Asn Arg Asp Val Ile Thr Leu Arg Ser Trp Leu Pro Met Gly
  195                               200                               205

a Asp Tyr Ile Ile Met Asn Tyr Ser Val Lys His Pro Lys Tyr Pro
  210                               215                               220

```


eolf-seql-S000001.txt

to Arg Lys Asp Leu Val Arg Ala Val Ser Ile Gln Thr Gly Tyr Leu
 25 230 235 240

le Gln Ser Thr Gly Pro Lys Ser Cys Val Ile Thr Tyr Leu Ala Gln
 245 250 255

al Asp Pro Lys Gly Ser Leu Pro Lys Trp Val Val Asn Lys Ser Ser
 260 265 270

in Phe Leu Ala Pro Lys Ala Met Lys Lys Met Tyr Lys Ala Cys Leu
 275 280 285

ts Tyr Pro Glu Trp Lys Gln Lys His Leu Pro His Phe Lys Pro Trp
 290 295 300

ou His Pro Glu Gln Ser Pro Leu Pro Ser Leu Ala Leu Ser Glu Leu
 310 315 320

er Val Gln His Ala Asp Ser Leu Glu Asn Ile Asp Glu Ser Ala Val
 325 330 335

a Glu Ser Arg Glu Glu Arg Met Gly Gly Ala Gly Gly Glu Gly Ser
 340 345 350

p Asp Asp Thr Ser Leu Thr
 355

10> 122

11> 199

12> PRT

13> Homo sapiens

00> 122

t Ser Ser Gly Asn Ala Lys Ile Gly His Pro Ala Pro Asn Phe Lys
 5 10 15

a Thr Ala Val Met Pro Asp Gly Gln Phe Lys Asp Ile Ser Leu Ser
 20 25 30

p Tyr Lys Gly Lys Tyr Val Val Phe Phe Phe Tyr Pro Leu Asp Phe
 35 40 45

eolf-seql-S000001.txt

r Phe Val Cys Pro Thr Glu Ile Ile Ala Phe Ser Asp Arg Ala Glu
50 55 60

u Phe Lys Lys Leu Asn Cys Gln Val Ile Gly Ala Ser Val Asp Ser
70 75 80

s Phe Cys His Leu Ala Trp Val Asn Thr Pro Lys Lys Gln Gly Gly
85 90 95

u Gly Pro Met Asn Ile Pro Leu Val Ser Asp Pro Lys Arg Thr Ile
100 105 110

a Gln Asp Tyr Gly Val Leu Lys Ala Asp Glu Gly Ile Ser Phe Arg
115 120 125

y Leu Phe Ile Ile Asp Asp Lys Gly Ile Leu Arg Gln Ile Thr Val
130 135 140

n Asp Leu Pro Val Gly Arg Ser Val Asp Glu Thr Leu Arg Leu Val
5 150 155 160

n Ala Phe Gln Phe Thr Asp Lys His Gly Glu Val Cys Pro Ala Gly
165 170 175

p Lys Pro Gly Ser Asp Thr Ile Lys Pro Asp Val Gln Lys Ser Lys
180 185 190

u Tyr Phe Ser Lys Gln Lys
195

10> 123

11> 219

12> PRT

13> Homo sapiens

20> 123

z Ser Gly Leu Ser Gly Pro Pro Ala Arg Arg Gly Pro Phe Pro Leu
5 10 15

a Leu Leu Leu Leu Phe Leu Leu Gly Pro Arg Leu Val Leu Ala Ile
20 25 30

eolf-seql-S000001.txt

```

r Phe His Leu Pro Ile Asn Ser Arg Lys Cys Leu Arg Glu Glu Ile
  35                      40                      45

s Lys Asp Leu Leu Val Thr Gly Ala Tyr Glu Ile Ser Asp Gln Ser
  50                      55                      60

y Gly Ala Gly Gly Leu Arg Ser His Leu Arg Ile Thr Asp Ser Ala
  70                      75                      80

y His Ile Leu Tyr Ser Lys Glu Asp Ala Thr Lys Gly Lys Phe Ala
  85                      90                      95

e Thr Thr Glu Asp Tyr Asp Met Phe Glu Val Cys Phe Glu Ser Lys
 100                      105                      110

y Thr Gly Arg Ile Pro Asp Gln Leu Val Ile Leu Asp Met Lys His
 115                      120                      125

y Val Glu Ala Lys Asn Tyr Glu Glu Ile Ala Lys Val Glu Lys Leu
 130                      135                      140

s Pro Leu Glu Val Glu Leu Arg Arg Leu Glu Asp Leu Ser Glu Ser
 150                      155                      160

e Val Asn Asp Phe Ala Tyr Met Lys Lys Arg Glu Glu Glu Met Arg
 165                      170                      175

o Thr Asn Glu Ser Thr Asn Thr Arg Val Leu Tyr Phe Ser Ile Phe
 180                      185                      190

: Met Phe Cys Leu Ile Gly Leu Ala Thr Trp Gln Val Phe Tyr Leu
 195                      200                      205

j Arg Phe Phe Lys Ala Lys Lys Leu Ile Glu
 210                      215

```

```

.0> 124
.1> 1575
.2> PRT
.3> Homo sapiens

```

```

00> 124

```

eolf-seql-S000001.txt

t Pro His Glu Glu Leu Pro Ser Leu Gln Arg Pro Arg Tyr Gly Ser
 5 10 15
 e Val Asp Asp Glu Arg Leu Ser Ala Glu Glu Met Asp Glu Arg Arg
 20 25 30
 g Gln Asn Ile Ala Tyr Glu Tyr Leu Cys His Leu Glu Glu Ala Lys
 35 40 45
 g Trp Met Glu Val Cys Leu Val Glu Glu Leu Pro Pro Thr Thr Glu
 50 55 60
 u Glu Glu Gly Leu Arg Asn Gly Val Tyr Leu Ala Lys Leu Ala Lys
 70 75 80
 e Phe Ala Pro Lys Met Val Ser Glu Lys Lys Ile Tyr Asp Val Glu
 85 90 95
 n Thr Arg Tyr Lys Lys Ser Gly Leu His Phe Arg His Thr Asp Asn
 100 105 110
 r Val Gln Trp Leu Arg Ala Met Glu Ser Ile Gly Leu Pro Lys Ile
 115 120 125
 e Tyr Pro Glu Thr Thr Asp Val Tyr Asp Arg Lys Asn Ile Pro Arg
 130 135 140
 : Ile Tyr Cys Ile His Ala Leu Ser Leu Tyr Leu Phe Lys Leu Gly
 5 150 155 160
 e Ala Pro Gln Ile Gln Asp Leu Leu Gly Lys Val Asp Phe Thr Glu
 165 170 175
 i Glu Ile Ser Asn Met Arg Lys Glu Leu Glu Lys Tyr Gly Ile Gln
 180 185 190
 : Pro Ser Phe Ser Lys Ile Gly Gly Ile Leu Ala Asn Glu Leu Ser
 195 200 205
 . Asp Glu Ala Ala Leu His Ala Ala Val Ile Ala Ile Asn Glu Ala
 210 215 220

eolf-seql-S000001.txt

al Glu Lys Gly Ile Ala Glu Gln Thr Val Val Thr Leu Arg Asn Pro
 25 230 235 240
 sn Ala Val Leu Thr Leu Val Asp Asp Asn Leu Ala Pro Glu Tyr Gln
 245 250 255
 ys Glu Leu Trp Asp Ala Lys Lys Lys Lys Glu Glu Asn Ala Arg Leu
 260 265 270
 ys Asn Ser Cys Ile Ser Glu Glu Glu Arg Asp Ala Tyr Glu Glu Leu
 275 280 285
 eu Thr Gln Ala Glu Ile Gln Gly Asn Ile Asn Lys Val Asn Arg Gln
 290 295 300
 la Ala Val Asp His Ile Asn Ala Val Ile Pro Glu Gly Asp Pro Glu
 305 310 315 320
 sn Thr Leu Leu Ala Leu Lys Lys Pro Glu Ala Gln Leu Pro Ala Val
 325 330 335
 yr Pro Phe Ala Ala Ala Met Tyr Gln Asn Glu Leu Phe Asn Leu Gln
 340 345 350
 ys Gln Asn Thr Met Asn Tyr Leu Ala His Glu Glu Leu Leu Ile Ala
 355 360 365
 il Glu Met Leu Ser Ala Val Ala Leu Leu Asn Gln Ala Leu Glu Ser
 370 375 380
 sn Asp Leu Val Ser Val Gln Asn Gln Leu Arg Ser Pro Ala Ile Gly
 385 390 395 400
 eu Asn Asn Leu Asp Lys Ala Tyr Val Glu Arg Tyr Ala Asn Thr Leu
 405 410 415
 eu Ser Val Lys Leu Glu Val Leu Ser Gln Gly Gln Asp Asn Leu Ser
 420 425 430
 p Asn Glu Ile Gln Asn Cys Ile Asp Met Val Asn Ala Gln Ile Gln

eolf-seql-S000001.txt
440

435

445

lu Glu Asn Asp Arg Val Val Ala Val Gly Tyr Ile Asn Glu Ala Ile
450 455 460

sp Glu Gly Asn Pro Leu Arg Thr Leu Glu Thr Leu Leu Leu Pro Thr
65 470 475 480

la Asn Ile Ser Asp Val Asp Pro Ala His Ala Gln His Tyr Gln Asp
485 490 495

al Leu Tyr His Ala Lys Ser Gln Lys Leu Gly Asp Ser Glu Ser Val
500 505 510

er Lys Val Leu Trp Leu Asp Glu Ile Gln Gln Ala Val Asp Glu Ala
515 520 525

sn Val Asp Glu Asp Arg Ala Lys Gln Trp Val Thr Leu Val Val Asp
530 535 540

al Asn Gln Cys Leu Glu Gly Lys Lys Ser Ser Asp Ile Leu Ser Val
45 550 555 560

eu Lys Ser Ser Thr Ser Asn Ala Asn Asp Ile Ile Pro Glu Cys Ala
565 570 575

sp Lys Tyr Tyr Asp Ala Leu Val Lys Ala Lys Glu Leu Lys Ser Glu
580 585 590

cg Val Ser Ser Asp Gly Ser Trp Leu Lys Leu Asn Leu His Lys Lys
595 600 605

vr Asp Tyr Tyr Tyr Asn Thr Asp Ser Lys Glu Ser Ser Trp Val Thr
610 615 620

o Glu Ser Cys Phe Tyr Lys Glu Ser Trp Leu Thr Gly Lys Glu Ile
625 630 635 640

u Asp Ile Ile Glu Glu Val Thr Val Gly Tyr Ile Arg Glu Asn Ile
645 650 655

eolf-seql-S000001.txt

cp Ser Ala Ser Glu Glu Leu Leu Arg Phe Gln Ala Thr Ser Ser
 660 665 670

ly Pro Ile Leu Arg Glu Glu Phe Glu Ala Arg Lys Ser Phe Leu His
 675 680 685

lu Gln Glu Glu Asn Val Val Lys Ile Gln Ala Phe Trp Lys Gly Tyr
 690 695 700

ys Gln Arg Lys Glu Tyr Met His Arg Arg Gln Thr Phe Ile Asp Asn
 705 710 715 720

ar Asp Ser Val Val Lys Ile Gln Ser Trp Phe Arg Met Ala Thr Ala
 725 730 735

rg Lys Ser Tyr Leu Ser Arg Leu Gln Tyr Phe Arg Asp His Asn Asn
 740 745 750

lu Ile Val Lys Ile Gln Ser Leu Leu Arg Ala Asn Lys Ala Arg Asp
 755 760 765

sp Tyr Lys Thr Leu Val Gly Ser Glu Asn Pro Pro Leu Thr Val Ile
 770 775 780

rg Lys Phe Val Tyr Leu Leu Asp Gln Ser Asp Leu Asp Phe Gln Glu
 785 790 795 800

lu Leu Glu Val Ala Arg Leu Arg Glu Glu Val Val Thr Lys Ile Arg
 805 810

a Asn Gln Gln Leu Glu Lys Asp Leu Asn Leu Met Asp Ile Lys Ile
 820 825 830

y Leu Leu Val Lys Asn Arg Ile Thr Leu Glu Asp Val Ile Ser His
 835 840 845

r Lys Lys Leu Asn Lys Lys Lys Gly Gly Glu Met Glu Ile Leu Asn
 850 855 860

n Thr Asp Asn Gln Gly Ile Lys Ser Leu Ser Lys Glu Arg Arg Lys
 865 870 875 880

eolf-seql-S000001.txt

```

r Leu Glu Thr Tyr Gln Gln Leu Phe Tyr Leu Leu Gln Thr Asn Pro
  885                                890                        895

u Tyr Leu Ala Lys Leu Ile Phe Gln Met Pro Gln Asn Lys Ser Thr
  900                                905                        910

s Phe Met Asp Thr Val Ile Phe Thr Leu Tyr Asn Tyr Ala Ser Asn
  915                                920                        925

n Arg Glu Glu Tyr Leu Leu Leu Lys Leu Phe Lys Thr Ala Leu Glu
  930                                935                        940

u Glu Ile Lys Ser Lys Val Asp Gln Val Gln Asp Ile Val Thr Gly
  5                                950                        955                        960

n Pro Thr Val Ile Lys Met Val Val Ser Phe Asn Arg Gly Ala Arg
  965                                970                        975

y Gln Asn Thr Leu Arg Gln Leu Leu Ala Pro Val Val Lys Glu Ile
  980                                985                        990

e Asp Asp Lys Ser Leu Ile Ile Asn Thr Asn Pro Val Glu Val Tyr
  995                                1000                        1005

s Ala Trp Val Asn Gln Leu Glu Thr Gln Thr Gly Glu Ala Ser
  1010                                1015                        1020

s Leu Pro Tyr Asp Val Thr Thr Glu Gln Ala Leu Thr Tyr Pro
  1025                                1030                        1035

i Val Lys Asn Lys Leu Glu Ala Ser Ile Glu Asn Leu Arg Arg
  1040                                1045                        1050

. Thr Asp Lys Val Leu Asn Ser Ile Ile Ser Ser Leu Asp Leu
  1055                                1060                        1065

i Pro Tyr Gly Leu Arg Tyr Ile Ala Lys Val Leu Lys Asn Ser
  1070                                1075                        1080

: His Glu Lys Phe Pro Asp Ala Thr Glu Asp Glu Leu Leu Lys
  1085                                1090                        1095

```


eolf-seql-S000001.txt

```

le Val Gly Asn Leu Leu Tyr Tyr Arg Tyr Met Asn Pro Ala Ile
  1100      1105      1110

al Ala Pro Asp Gly Phe Asp Ile Ile Asp Met Thr Ala Gly Gly
  1115      1120      1125

ln Ile Asn Ser Asp Gln Arg Arg Asn Leu Gly Ser Val Ala Lys
  1130      1135      1140

al Leu Gln His Ala Ala Ser Asn Lys Leu Phe Glu Gly Glu Asn
  1145      1150      1155

lu His Leu Ser Ser Met Asn Asn Tyr Leu Ser Glu Thr Tyr Gln
  1160      1165      1170

lu Phe Arg Lys Tyr Phe Lys Glu Ala Cys Asn Val Pro Glu Pro
  1175      1180      1185

lu Glu Lys Phe Asn Met Asp Lys Tyr Thr Asp Leu Val Thr Val
  1190      1195      1200

er Lys Pro Val Ile Tyr Ile Ser Ile Glu Glu Ile Ile Ser Thr
  1205      1210      1215

is Ser Leu Leu Leu Glu His Gln Asp Ala Ile Ala Pro Glu Lys
  1220      1225      1230

sn Asp Leu Leu Ser Glu Leu Leu Gly Ser Leu Gly Glu Val Pro
  1235      1240      1245

ar Val Glu Ser Phe Leu Gly Glu Gly Ala Val Asp Pro Asn Asp
  1250      1255      1260

o Asn Lys Ala Asn Thr Leu Ser Gln Leu Ser Lys Thr Glu Ile
  1265      1270      1275

r Leu Val Leu Thr Ser Lys Tyr Asp Ile Glu Asp Gly Glu Ala
  1280      1285      1290

e Asp Ser Arg Ser Leu Met Ile Lys Thr Lys Lys Leu Ile Ile

```

eolf-seql-S000001.txt

1295						1300						1305		
sp	Val	Ile	Arg	Asn	Gln	Pro	Gly	Asn	Thr	Leu	Thr	Glu	Ile	Leu
	1310					1315					1320			
lu	Thr	Pro	Ala	Thr	Ala	Gln	Gln	Glu	Val	Asp	His	Ala	Thr	Asp
	1325					1330					1335			
et	Val	Ser	Arg	Ala	Met	Ile	Asp	Ser	Arg	Thr	Pro	Glu	Glu	Met
	1340					1345					1350			
ys	His	Ser	Gln	Ser	Met	Ile	Glu	Asp	Ala	Gln	Leu	Pro	Leu	Glu
	1355					1360					1365			
ln	Lys	Lys	Arg	Lys	Ile	Gln	Arg	Asn	Leu	Arg	Thr	Leu	Glu	Gln
	1370					1375					1380			
ir	Gly	His	Val	Ser	Ser	Glu	Asn	Lys	Tyr	Gln	Asp	Ile	Leu	Asn
	1385					1390					1395			
u	Ile	Ala	Lys	Asp	Ile	Arg	Asn	Gln	Arg	Ile	Tyr	Arg	Lys	Leu
	1400					1405					1410			
g	Lys	Ala	Glu	Leu	Ala	Lys	Leu	Gln	Gln	Thr	Leu	Asn	Ala	Leu
	1415					1420					1425			
n	Lys	Lys	Ala	Ala	Phe	Tyr	Glu	Glu	Gln	Ile	Asn	Tyr	Tyr	Asp
	1430					1435					1440			
ir	Tyr	Ile	Lys	Thr	Cys	Leu	Asp	Asn	Leu	Lys	Arg	Lys	Asn	Thr
	1445					1450					1455			
g	Arg	Ser	Ile	Lys	Leu	Asp	Gly	Lys	Gly	Glu	Pro	Lys	Gly	Ala
	1460					1465					1470			
s	Arg	Ala	Lys	Pro	Val	Lys	Tyr	Thr	Ala	Ala	Lys	Leu	His	Glu
	1475					1480					1485			
s	Gly	Val	Leu	Leu	Asp	Ile	Asp	Asp	Leu	Gln	Thr	Asn	Gln	Phe
	1490					1495					1500			

eolf-seql-S000001.txt

ys Asn Val Thr Phe Asp Ile Ile Ala Thr Glu Asp Val Gly Ile
 1505 1510 1515

he Asp Val Arg Ser Lys Phe Leu Gly Val Glu Met Glu Lys Val
 1520 1525 1530

ln Leu Asn Ile Gln Asp Leu Leu Gln Met Gln Tyr Glu Gly Val
 1535 1540 1545

la Val Met Lys Met Phe Asp Lys Val Lys Val Asn Val Asn Leu
 1550 1555 1560

eu Ile Tyr Leu Leu Asn Lys Lys Phe Tyr Gly Lys
 1565 1570 1575

210> 125

211> 212

212> PRT

213> Homo sapiens

400> 125

et Ala Tyr Ala Tyr Leu Phe Lys Tyr Ile Ile Ile Gly Asp Thr Gly
 5 10 15

al Gly Lys Ser Cys Leu Leu Leu Gln Phe Thr Asp Lys Arg Phe Gln
 20 25 30

co Val His Asp Leu Thr Ile Gly Val Glu Phe Gly Ala Arg Met Ile
 35 40 45

ir Ile Asp Gly Lys Gln Ile Lys Leu Gln Ile Trp Asp Thr Ala Gly
 50 55 60

ln Glu Ser Phe Arg Ser Ile Thr Arg Ser Tyr Tyr Arg Gly Ala Ala
 70 75 80

y Ala Leu Leu Val Tyr Asp Ile Thr Arg Arg Asp Thr Phe Asn His
 85 90 95

u Thr Thr Trp Leu Glu Asp Ala Arg Gln His Ser Asn Ser Asn Met
 100 105 110

eolf-seql-S000001.txt

al Ile Met Leu Ile Gly Asn Lys Ser Asp Leu Glu Ser Arg Arg Glu
 115 120 125

al Lys Lys Glu Glu Gly Glu Ala Phe Ala Arg Glu His Gly Leu Ile
 130 135 140

ne Met Glu Thr Ser Ala Lys Thr Ala Ser Asn Val Glu Glu Ala Phe
 45 150 155 160

le Asn Thr Ala Lys Glu Ile Tyr Glu Lys Ile Gln Glu Gly Val Phe
 165 170 175

sp Ile Asn Asn Glu Ala Asn Gly Ile Lys Ile Gly Pro Gln His Ala
 180 185 190

la Thr Asn Ala Thr His Ala Gly Asn Gln Gly Gly Gln Gln Ala Gly
 195 200 205

ly Gly Cys Cys
 210

?10> 126

?11> 181

?12> PRT

?13> Homo sapiens

!00> 126

et Gly Asn Ile Phe Ala Asn Leu Phe Lys Gly Leu Phe Gly Lys Lys
 5 10 15

u Met Arg Ile Leu Met Val Gly Leu Asp Ala Ala Gly Lys Thr Thr
 20 25 30

e Leu Tyr Lys Leu Lys Leu Gly Glu Ile Val Thr Thr Ile Pro Thr
 35 40 45

e Gly Phe Asn Val Glu Thr Val Glu Tyr Lys Asn Ile Ser Phe Thr
 50 55 60

l Trp Asp Val Gly Gly Gln Asp Lys Ile Arg Pro Leu Trp Arg His
 70 75 80

eolf-seql-S000001.txt

yr Phe Gln Asn Thr Gln Gly Leu Ile Phe Val Val Asp Ser Asn Asp
 85 90 95

rg Glu Arg Val Asn Glu Ala Arg Glu Glu Leu Met Arg Met Leu Ala
 100 105 110

lu Asp Glu Leu Arg Asp Ala Val Leu Leu Val Phe Ala Asn Lys Gln
 115 120 125

sp Leu Pro Asn Ala Met Asn Ala Ala Glu Ile Thr Asp Lys Leu Gly
 130 135 140

eu His Ser Leu Arg His Arg Asn Trp Tyr Ile Gln Ala Thr Cys Ala
 15 150 155 160

nr Ser Gly Asp Gly Leu Tyr Glu Gly Leu Asp Trp Leu Ser Asn Gln
 165 170 175

eu Arg Asn Gln Lys
 180

?10> 127

?11> 732

?12> PRT

?13> Homo sapiens

100> 127

st Pro Glu Glu Thr Gln Thr Gln Asp Gln Pro Met Glu Glu Glu Glu
 5 10 15

al Glu Thr Phe Ala Phe Gln Ala Glu Ile Ala Gln Leu Met Ser Leu
 20 25 30

le Ile Asn Thr Phe Tyr Ser Asn Lys Glu Ile Phe Leu Arg Glu Leu
 35 40 45

le Ser Asn Ser Ser Asp Ala Leu Asp Lys Ile Arg Tyr Glu Thr Leu
 50 55 60

rx Asp Pro Ser Lys Leu Asp Ser Gly Lys Glu Leu His Ile Asn Leu
 70 75 80

eolf-seql-S000001.txt

le Pro Asn Lys Gln Asp Arg Thr Leu Thr Ile Val Asp Thr Gly Ile
85 90 95

ly Met Thr Lys Ala Asp Leu Ile Asn Asn Leu Gly Thr Ile Ala Lys
100 105 110

er Gly Thr Lys Ala Phe Met Glu Ala Leu Gln Ala Gly Ala Asp Ile
115 120 125

er Met Ile Gly Gln Phe Gly Val Gly Phe Tyr Ser Ala Tyr Leu Val
130 135 140

la Glu Lys Val Thr Val Ile Thr Lys His Asn Asp Asp Glu Gln Tyr
145 150 155 160

la Trp Glu Ser Ser Ala Gly Gly Ser Phe Thr Val Arg Thr Asp Thr
165 170 175

ly Glu Pro Met Gly Arg Gly Thr Lys Val Ile Leu His Leu Lys Glu
180 185 190

sp Gln Thr Glu Tyr Leu Glu Glu Arg Arg Ile Lys Glu Ile Val Lys
195 200 205

ys His Ser Gln Phe Ile Gly Tyr Pro Ile Thr Leu Phe Val Glu Lys
210 215 220

lu Arg Asp Lys Glu Val Ser Asp Asp Glu Ala Glu Glu Lys Glu Asp
225 230 235 240

ys Glu Glu Glu Lys Glu Lys Glu Glu Lys Glu Ser Glu Asp Lys Pro
245 250 255

u Ile Glu Asp Val Gly Ser Asp Glu Glu Glu Glu Lys Lys Asp Gly
260 265 270

sp Lys Lys Lys Lys Lys Lys Ile Lys Glu Lys Tyr Ile Asp Gln Glu
275 280 285

u Leu Asn Lys Thr Lys Pro Ile Trp Thr Arg Asn Pro Asp Asp Ile
290 295 300

eolf-seql-S000001.txt

```

hr Asn Glu Glu Tyr Gly Glu Phe Tyr Lys Ser Leu Thr Asn Asp Trp
05          310          315          320

lu Asp His Leu Ala Val Lys His Phe Ser Val Glu Gly Gln Leu Glu
          325          330          335

he Arg Ala Leu Leu Phe Val Pro Arg Arg Ala Pro Phe Asp Leu Phe
          340          345          350

lu Asn Arg Lys Lys Lys Asn Asn Ile Lys Leu Tyr Val Arg Arg Val
          355          360          365

ne Ile Met Asp Asn Cys Glu Glu Leu Ile Pro Glu Tyr Leu Asn Phe
370          375          380

le Arg Gly Val Val Asp Ser Glu Asp Leu Pro Leu Asn Ile Ser Arg
35          390          395          400

lu Met Leu Gln Gln Ser Lys Ile Leu Lys Val Ile Arg Lys Asn Leu
          405          410          415

al Lys Lys Cys Leu Glu Leu Phe Thr Glu Leu Ala Glu Asp Lys Glu
          420          425          430

sn Tyr Lys Lys Phe Tyr Glu Gln Phe Ser Lys Asn Ile Lys Leu Gly
435          440          445

e His Glu Asp Ser Gln Asn Arg Lys Lys Leu Ser Glu Leu Leu Arg
450          455          460

'r Tyr Thr Ser Ala Ser Gly Asp Glu Met Val Ser Leu Lys Asp Tyr
5          470          475          480

's Thr Arg Met Lys Glu Asn Gln Lys His Ile Tyr Tyr Ile Thr Gly
          485          490          495

u Thr Lys Asp Gln Val Ala Asn Ser Ala Phe Val Glu Arg Leu Arg
          500          505          510

s His Gly Leu Glu Val Ile Tyr Met Ile Glu Pro Ile Asp Glu Tyr
515          520          525

```

eolf-seql-S000001.txt

```

ys Val Gln Gln Leu Lys Glu Phe Glu Gly Lys Thr Leu Val Ser Val
  530                      535                      540
r Lys Glu Gly Leu Glu Leu Pro Glu Asp Glu Glu Glu Lys Lys Lys
  45                      550                      555                      560
ln Glu Glu Lys Lys Thr Lys Phe Glu Asn Leu Cys Lys Ile Met Lys
                    565                      570                      575
sp Ile Leu Glu Lys Lys Val Glu Lys Val Val Val Ser Asn Arg Leu
                    580                      585                      590
al Thr Ser Pro Cys Cys Ile Val Thr Ser Thr Tyr Gly Trp Thr Ala
                    595                      600                      605
sn Met Glu Arg Ile Met Lys Ala Gln Ala Leu Arg Asp Asn Ser Thr
   610                      615                      620
et Gly Tyr Met Ala Ala Lys Lys His Leu Glu Ile Asn Pro Asp His
  615                      630                      635                      640
er Ile Ile Glu Thr Leu Arg Gln Lys Ala Glu Ala Asp Lys Asn Asp
                    645                      650                      655
s Ser Val Lys Asp Leu Val Ile Leu Leu Tyr Glu Thr Ala Leu Leu
                    660                      665                      670
r Ser Gly Phe Ser Leu Glu Asp Pro Gln Thr His Ala Asn Arg Ile
   675                      680                      685
r Arg Met Ile Lys Leu Gly Leu Gly Ile Asp Glu Asp Asp Pro Thr
   690                      695                      700
a Asp Asp Thr Ser Ala Ala Val Thr Glu Glu Met Pro Pro Leu Glu
  705                      710                      715                      720
y Asp Asp Asp Thr Ser Arg Met Glu Glu Val Asp
                    725                      730

```

10> 128

eolf-seql-S000001.txt

211> 858

212> PRT

213> Homo sapiens

400> 128

et Gly Asp His Leu Asp Leu Leu Leu Gly Val Val Leu Met Ala Gly
 5 10 15

ro Val Phe Gly Ile Pro Ser Cys Ser Phe Asp Gly Arg Ile Ala Phe
 20 25 30

yr Arg Phe Cys Asn Leu Thr Gln Val Pro Gln Val Leu Asn Thr Thr
 35 40 45

lu Arg Leu Leu Leu Ser Phe Asn Tyr Ile Arg Thr Val Thr Ala Ser
 50 55 60

er Phe Pro Phe Leu Glu Gln Leu Gln Leu Leu Glu Leu Gly Ser Gln
 5 70 75 80

yr Thr Pro Leu Thr Ile Asp Lys Glu Ala Phe Arg Asn Leu Pro Asn
 85 90 95

eu Arg Ile Leu Asp Leu Gly Ser Ser Lys Ile Tyr Phe Leu His Pro
 100 105 110

sp Ala Phe Gln Gly Leu Phe His Leu Phe Glu Leu Arg Leu Tyr Phe
 115 120 125

ys Gly Leu Ser Asp Ala Val Leu Lys Asp Gly Tyr Phe Arg Asn Leu
 130 135 140

ys Ala Leu Thr Arg Leu Asp Leu Ser Lys Asn Gln Ile Arg Ser Leu
 15 150 155 160

rr Leu His Pro Ser Phe Gly Lys Leu Asn Ser Leu Lys Ser Ile Asp
 165 170 175

ie Ser Ser Asn Gln Ile Phe Leu Val Cys Glu His Glu Leu Glu Pro
 180 185 190

u Gln Gly Lys Thr Leu Ser Phe Phe Ser Leu Ala Ala Asn Ser Leu

eolf-seql-S000001.txt

195

200

205

```

yr  Ser Arg Val Ser Val Asp Trp Gly Lys Cys Met Asn Pro Phe Arg
    210                      215                220

sn  Met Val Leu Glu Ile Leu Asp Val Ser Gly Asn Gly Trp Thr Val
    25                      230                235                240

sp  Ile Thr Gly Asn Phe Ser Asn Ala Ile Ser Lys Ser Gln Ala Phe
    245                      250                255

er  Leu Ile Leu Ala His His Ile Met Gly Ala Gly Phe Gly Phe His
    260                      265                270

sn  Ile Lys Asp Pro Asp Gln Asn Thr Phe Ala Gly Leu Ala Arg Ser
    275                      280                285

er  Val Arg His Leu Asp Leu Ser His Gly Phe Val Phe Ser Leu Asn
    290                      295                300

er  Arg Val Phe Glu Thr Leu Lys Asp Leu Lys Val Leu Asn Leu Ala
    305                      310                315                320

yr  Asn Lys Ile Asn Lys Ile Ala Asp Glu Ala Phe Tyr Gly Leu Asp
    325                      330                335

sn  Leu Gln Val Leu Asn Leu Ser Tyr Asn Leu Leu Gly Glu Leu Tyr
    340                      345                350

er  Ser Asn Phe Tyr Gly Leu Pro Lys Val Ala Tyr Ile Asp Leu Gln
    355                      360                365

's  Asn His Ile Ala Ile Ile Gln Asp Gln Thr Phe Lys Phe Leu Glu
    370                      375                380

's  Leu Gln Thr Leu Asp Leu Arg Asp Asn Ala Leu Thr Thr Ile His
    385                      390                395                400

ie  Ile Pro Ser Ile Pro Asp Ile Phe Leu Ser Gly Asn Lys Leu Val
    405                      410                415

```

eolf-seql-S000001.txt

hr Leu Pro Lys Ile Asn Leu Thr Ala Asn Leu Ile His Leu Ser Glu
 420 425 430

sn Arg Leu Glu Asn Leu Asp Ile Leu Tyr Phe Leu Leu Arg Val Pro
 435 440 445

is Leu Gln Ile Leu Ile Leu Asn Gln Asn Arg Phe Ser Ser Cys Ser
 450 455 460

ly Asp Gln Thr Pro Ser Glu Asn Pro Ser Leu Glu Gln Leu Phe Leu
 55 470 475 480

ly Glu Asn Met Leu Gln Leu Ala Trp Glu Thr Glu Leu Cys Trp Asp
 485 490 495

al Phe Glu Gly Leu Ser His Leu Gln Val Leu Tyr Leu Asn His Asn
 500 505 510

yr Leu Asn Ser Leu Pro Pro Gly Val Phe Ser His Leu Thr Ala Leu
 515 520 525

rg Gly Leu Ser Leu Asn Ser Asn Arg Leu Thr Val Leu Ser His Asn
 530 535 540

sp Leu Pro Ala Asn Leu Glu Ile Leu Asp Ile Ser Arg Asn Gln Leu
 15 550 555 560

eu Ala Pro Asn Pro Asp Val Phe Val Ser Leu Ser Val Leu Asp Ile
 565 570 575

rr His Asn Lys Phe Ile Cys Glu Cys Glu Leu Ser Thr Phe Ile Asn
 580 585 590

p Leu Asn His Thr Asn Val Thr Ile Ala Gly Pro Pro Ala Asp Ile
 595 600 605

r Cys Val Tyr Pro Asp Ser Phe Ser Gly Val Ser Leu Phe Ser Leu
 610 615 620

r Thr Glu Gly Cys Asp Glu Glu Glu Val Leu Lys Ser Leu Lys Phe
 5 630 635 640

eolf-seql-S000001.txt

```

er Leu Phe Ile Val Cys Thr Val Thr Leu Thr Leu Phe Leu Met Thr
      645                      650                      655

le Leu Thr Val Thr Lys Phe Arg Gly Phe Cys Phe Ile Cys Tyr Lys
      660                      665                      670

hr Ala Gln Arg Leu Val Phe Lys Asp His Pro Gln Gly Thr Glu Pro
      675                      680                      685

sp Met Tyr Lys Tyr Asp Ala Tyr Leu Cys Phe Ser Ser Lys Asp Phe
      690                      695                      700

ar Trp Val Gln Asn Ala Leu Leu Lys His Leu Asp Thr Gln Tyr Ser
  35                      710                      715                      720

sp Gln Asn Arg Phe Asn Leu Cys Phe Glu Glu Arg Asp Phe Val Pro
      725                      730                      735

ly Glu Asn Arg Ile Ala Asn Ile Gln Asp Ala Ile Trp Asn Ser Arg
      740                      745                      750

ys Ile Val Cys Leu Val Ser Arg His Phe Leu Arg Asp Gly Trp Cys
      755                      760                      765

eu Glu Ala Phe Ser Tyr Ala Gln Gly Arg Cys Leu Ser Asp Leu Asn
      770                      775                      780

er Ala Leu Ile Met Val Val Val Gly Ser Leu Ser Gln Tyr Gln Leu
  35                      790                      795                      800

st Lys His Gln Ser Ile Arg Gly Phe Val Gln Lys Gln Gln Tyr Leu
      805                      810                      815

g Trp Pro Glu Asp Leu Gln Asp Val Gly Trp Phe Leu His Lys Leu
      820                      825                      830

r Gln Gln Ile Leu Lys Lys Glu Lys Glu Lys Lys Lys Asp Asn Asn
      835                      840                      845

e Pro Leu Gln Thr Val Ala Thr Ile Ser
      850                      855

```

eolf-seql-S000001.txt

210> 129
 211> 466
 212> PRT
 213> Homo sapiens

 400> 129

 et Val Met Glu Lys Pro Ser Pro Leu Leu Val Gly Arg Glu Phe Val
 5 10 15

 rg Gln Tyr Tyr Thr Leu Leu Asn Gln Ala Pro Asp Met Leu His Arg
 20 25 30

 ne Tyr Gly Lys Asn Ser Ser Tyr Val His Gly Gly Leu Asp Ser Asn
 35 40 45

 ly Lys Pro Ala Asp Ala Val Tyr Gly Gln Lys Glu Ile His Arg Lys
 50 55 60

 al Met Ser Gln Asn Phe Thr Asn Cys His Thr Lys Ile Arg His Val
 70 75 80

 sp Ala His Ala Thr Leu Asn Asp Gly Val Val Val Gln Val Met Gly
 85 90 95

 ou Leu Ser Asn Asn Asn Gln Ala Leu Arg Arg Phe Met Gln Thr Phe
 100 105 110

 al Leu Ala Pro Glu Gly Ser Val Ala Asn Lys Phe Tyr Val His Asn
 115 120 125

 p Ile Phe Arg Tyr Gln Asp Glu Val Phe Gly Gly Phe Val Thr Glu
 130 135 140

 o Gln Glu Glu Ser Glu Glu Glu Val Glu Glu Pro Glu Glu Arg Gln
 15 150 155 160

 n Thr Pro Glu Val Val Pro Asp Asp Ser Gly Thr Phe Tyr Asp Gln
 165 170 175

 a Val Val Ser Asn Asp Met Glu Glu His Leu Glu Glu Pro Val Ala
 180 185 190

eolf-seql-S000001.txt

lu Pro Glu Pro Asp Pro Glu Pro Glu Pro Glu Gln Glu Pro Val Ser
 195 200 205
 lu Ile Gln Glu Glu Lys Pro Glu Pro Val Leu Glu Glu Thr Ala Pro
 210 215 220
 lu Asp Ala Gln Lys Ser Ser Ser Pro Ala Pro Ala Asp Ile Ala Gln
 25 230 235 240
 hr Val Gln Glu Asp Leu Arg Thr Phe Ser Trp Ala Ser Val Thr Ser
 245 250 255
 ys Asn Leu Pro Pro Ser Gly Ala Val Pro Val Thr Gly Ile Pro Pro
 260 265 270
 is Val Val Lys Val Pro Ala Ser Gln Pro Arg Pro Glu Ser Lys Pro
 275 280 285
 lu Ser Gln Ile Pro Pro Gln Arg Pro Gln Arg Asp Gln Arg Val Arg
 290 295 300
 lu Gln Arg Ile Asn Ile Pro Pro Gln Arg Gly Pro Arg Pro Ile Arg
 305 310 315 320
 lu Ala Gly Glu Gln Gly Asp Ile Glu Pro Arg Arg Met Val Arg His
 325 330 335
 ro Asp Ser His Gln Leu Phe Ile Gly Asn Leu Pro His Glu Val Asp
 340 345 350
 rs Ser Glu Leu Lys Asp Phe Phe Gln Ser Tyr Gly Asn Val Val Glu
 355 360 365
 lu Arg Ile Asn Ser Gly Gly Lys Leu Pro Asn Phe Gly Phe Val Val
 370 375 380
 ie Asp Asp Ser Glu Pro Val Gln Lys Val Leu Ser Asn Arg Pro Ile
 385 390 395 400
 t Phe Arg Gly Glu Val Arg Leu Asn Val Glu Glu Lys Lys Thr Arg

eolf-seql-S000001.txt

405

410

415

la Ala Arg Glu Gly Asp Arg Arg Asp Asn Arg Leu Arg Gly Pro Gly
 420 425 430

ly Pro Arg Gly Gly Leu Gly Gly Gly Met Arg Gly Pro Pro Arg Gly
 435 440 445

ly Met Val Gln Lys Pro Gly Phe Gly Val Gly Arg Gly Leu Ala Pro
 450 455 460

rg Gln
 55

210> 130
 211> 245
 212> PRT
 213> Homo sapiens

100> 130

et Thr Leu Phe Pro Val Leu Leu Phe Leu Val Ala Gly Leu Leu Pro
 5 10 15

er Phe Pro Ala Asn Glu Asp Lys Asp Pro Ala Phe Thr Ala Leu Leu
 20 25 30

ir Thr Gln Thr Gln Val Gln Arg Glu Ile Val Asn Lys His Asn Glu
 35 40 45

u Arg Arg Ala Val Ser Pro Pro Ala Arg Asn Met Leu Lys Met Glu
 50 55 60

p Asn Lys Glu Ala Ala Ala Asn Ala Gln Lys Trp Ala Asn Gln Cys
 70 75 80

n Tyr Arg His Ser Asn Pro Lys Asp Arg Met Thr Ser Leu Lys Cys
 85 90 95

y Glu Asn Leu Tyr Met Ser Ser Ala Ser Ser Ser Trp Ser Gln Ala
 100 105 110

e Gln Ser Trp Phe Asp Glu Tyr Asn Asp Phe Asp Phe Gly Val Gly

eolf-seql-S000001.txt

115

120

125

ro Lys Thr Pro Asn Ala Val Val Gly His Tyr Thr Gln Val Val Trp
 130 135 140

yr Ser Ser Tyr Leu Val Gly Cys Gly Asn Ala Tyr Cys Pro Asn Gln
 145 150 155 160

ys Val Leu Lys Tyr Tyr Tyr Val Cys Gln Tyr Cys Pro Ala Gly Asn
 165 170 175

ap Ala Asn Arg Leu Tyr Val Pro Tyr Glu Gln Gly Ala Pro Cys Ala
 180 185 190

er Cys Pro Asp Asn Cys Asp Asp Gly Leu Cys Thr Asn Gly Cys Lys
 195 200 205

yr Glu Asp Leu Tyr Ser Asn Cys Lys Ser Leu Lys Leu Thr Leu Thr
 210 215 220

ys Lys His Gln Leu Val Arg Asp Ser Cys Lys Ala Ser Cys Asn Cys
 225 230 235 240

er Asn Ser Ile Tyr
 245

:10> 131

:11> 202

:12> PRT

:13> Homo sapiens

:00> 131

at Cys Thr Gly Gly Cys Ala Arg Cys Leu Gly Gly Thr Leu Ile Pro
 5 10 15

u Ala Phe Phe Gly Phe Leu Ala Asn Ile Leu Leu Phe Phe Pro Gly
 20 25 30

y Lys Val Ile Asp Asp Asn Asp His Leu Ser Gln Glu Ile Trp Phe
 35 40 45

e Gly Gly Ile Leu Gly Ser Gly Val Leu Met Ile Phe Pro Ala Leu

eolf-seql-S000001.txt

50

55

60

al Phe Leu Gly Leu Lys Asn Asn Asp Cys Cys Gly Cys Cys Gly Asn
 5 70 75 80

lu Gly Cys Gly Lys Arg Phe Ala Met Phe Thr Ser Thr Ile Phe Ala
 85 90 95

al Val Gly Phe Leu Gly Ala Gly Tyr Ser Phe Ile Ile Ser Ala Ile
 100 105 110

er Ile Asn Lys Gly Pro Lys Cys Leu Met Ala Asn Ser Thr Trp Gly
 115 120 125

yr Pro Phe His Asp Gly Asp Tyr Leu Asn Asp Glu Ala Leu Trp Asn
 130 135 140

ys Cys Arg Glu Pro Leu Asn Val Val Pro Trp Asn Leu Thr Leu Phe
 15 150 155 160

er Ile Leu Leu Val Val Gly Gly Ile Gln Met Val Leu Cys Ala Ile
 165 170 175

ln Val Val Asn Gly Leu Leu Gly Thr Leu Cys Gly Asp Cys Gln Cys
 180 185 190

's Gly Cys Cys Gly Gly Asp Gly Pro Val
 195 200

:10> 132

:11> 295

:12> PRT

:13> Homo sapiens

:00> 132

at Gln Pro Glu Gly Ala Glu Lys Gly Lys Ser Phe Lys Gln Arg Leu
 5 10 15

l Leu Lys Ser Ser Leu Ala Lys Glu Thr Leu Ser Glu Phe Leu Gly
 20 25 30

r Phe Ile Leu Ile Val Leu Gly Cys Gly Cys Val Ala Gln Ala Ile

eolf-seql-S000001.txt

35

40

45

eu Ser Arg Gly Arg Phe Gly Gly Val Ile Thr Ile Asn Val Gly Phe
 50 55 60

er Met Ala Val Ala Met Ala Ile Tyr Val Ala Gly Gly Val Ser Gly
 5 70 75 80

ly His Ile Asn Pro Ala Val Ser Leu Ala Met Cys Leu Phe Gly Arg
 85 90 95

et Lys Trp Phe Lys Leu Pro Phe Tyr Val Gly Ala Gln Phe Leu Gly
 100 105 110

la Phe Val Gly Ala Ala Thr Val Phe Gly Ile Tyr Tyr Asp Gly Leu
 115 120 125

et Ser Phe Ala Gly Gly Lys Leu Leu Ile Val Gly Glu Asn Ala Thr
 130 135 140

la His Ile Phe Ala Thr Tyr Pro Ala Pro Tyr Leu Ser Leu Ala Asn
 145 150 155 160

la Phe Ala Asp Gln Val Val Ala Thr Met Ile Leu Leu Ile Ile Val
 165 170 175

ne Ala Ile Phe Asp Ser Arg Asn Leu Gly Ala Pro Arg Gly Leu Glu
 180 185 190

co Ile Ala Ile Gly Leu Leu Ile Ile Val Ile Ala Ser Ser Leu Gly
 195 200 205

eu Asn Ser Gly Cys Ala Met Asn Pro Ala Arg Asp Leu Ser Pro Arg
 210 215 220

eu Phe Thr Ala Leu Ala Gly Trp Gly Phe Glu Val Phe Arg Ala Gly
 225 230 235 240

in Asn Phe Trp Trp Ile Pro Val Val Gly Pro Leu Val Gly Ala Val
 245 250 255

eolf-seql-S000001.txt

le Gly Gly Leu Ile Tyr Val Leu Val Ile Glu Ile His His Pro Glu
 260 265 270

ro Asp Ser Val Phe Lys Ala Glu Gln Ser Glu Asp Lys Pro Glu Lys
 275 280 285

yr Glu Leu Ser Val Ile Met
 290 295

210> 133
 211> 288
 212> PRT
 213> Homo sapiens

400> 133

et Trp Leu Pro Ala Leu Val Leu Ala Thr Leu Ala Ala Ser Ala Ala
 5 10 15

cp Ala Val His Pro Ser Ser Pro Pro Val Val Asp Thr Val His Gly
 20 25 30

ys Val Leu Gly Lys Phe Ile Ser Leu Glu Gly Phe Ala Gln Pro Val
 35 40 45

la Val Phe Leu Gly Ile Pro Phe Ala Lys Pro Pro Leu Gly Pro Leu
 50 55 60

g Phe Thr Pro Pro Gln Pro Ala Glu Pro Trp Ser Phe Val Lys Asn
 70 75 80

a Thr Leu Tyr Pro Pro Met Phe Thr Gln Asp Pro Arg Arg Gly Gly
 85 90 95

n Leu Ile Ser Glu Leu Phe Thr Asn Arg Lys Glu Asn Ile Pro Leu
 100 105 110

s Leu Ser Glu Asp Cys Leu Tyr Leu Asn Ile Tyr Thr Pro Ala Asp
 115 120 125

u Thr Lys Lys Asn Arg Leu Pro Val Met Val Trp Ile His Gly Gly
 130 135 140

eolf-seql-S000001.txt

ly Leu Met Val Gly Ala Ala Ser Thr Tyr Asp Gly Leu Ala Leu Ala
 45 150 155 160

la His Glu Asn Val Val Val Val Thr Ile Gln Tyr Arg Leu Gly Ile
 165 170 175

ap Gly Phe Phe Ser Thr Gly Asp Glu His Ser Pro Gly Asn Trp Gly
 180 185 190

is Leu Asp Gln Leu Ala Ala Leu His Trp Val Gln Asp Asn Ile Ala
 195 200 205

er Phe Gly Gly Asn Pro Gly Ser Val Thr Ile Phe Gly Gly Ser Ala
 210 215 220

y Gly Glu Ser Val Ser Val Leu Val Leu Ser Pro Leu Ala Lys Asn
 225 230 235 240

u Phe His Arg Ala Ile Ser Glu Ser Gly Val Ala Leu Thr Ser Val
 245 250 255

u Val Lys Lys Gly Asp Val Lys Pro Leu Ala Glu Val Gly Leu Arg
 260 265 270

u Val Arg Leu Trp Leu Asp Thr His Thr Ser Leu Ala Leu Cys Ser
 275 280 285

10> 134

11> 98

12> PRT

13> Homo sapiens

00> 134

t Met Cys Gly Ala Pro Ser Ala Thr Gln Pro Ala Thr Ala Glu Thr
 5 10 15

n His Ile Ala Asp Gln Val Arg Ser Gln Leu Glu Glu Lys Glu Asn
 20 25 30

s Lys Phe Pro Val Phe Lys Ala Val Ser Phe Lys Ser Gln Val Val
 35 40 45

eolf-seql-S000001.txt

la Gly Thr Asn Tyr Phe Ile Lys Val His Val Gly Asp Glu Asp Phe
 50 55 60

al His Leu Arg Val Phe Gln Ser Leu Pro His Glu Asn Lys Pro Leu
 5 70 75 80

hr Leu Ser Asn Tyr Gln Thr Asn Lys Ala Lys His Asp Glu Leu Thr
 85 90 95

yr Phe

210> 135

211> 254

212> PRT

213> Homo sapiens

400> 135

et Ala Ser Leu Leu Lys Val Asp Gln Glu Val Lys Leu Lys Val Asp
 5 10 15

er Phe Arg Glu Arg Ile Thr Ser Glu Ala Glu Asp Leu Val Ala Asn
 20 25 30

ie Phe Pro Lys Lys Leu Leu Glu Leu Asp Ser Phe Leu Lys Glu Pro
 35 40 45

le Leu Asn Ile His Asp Leu Thr Gln Ile His Ser Asp Met Asn Leu
 50 55 60

o Val Pro Asp Pro Ile Leu Leu Thr Asn Ser His Asp Gly Leu Asp
 70 75 80

y Pro Thr Tyr Lys Lys Arg Arg Leu Asp Glu Cys Glu Glu Ala Phe
 85 90 95

n Gly Thr Lys Val Phe Val Met Pro Asn Gly Met Leu Lys Ser Asn
 100 105 110

n Gln Leu Val Asp Ile Ile Glu Lys Val Lys Pro Glu Ile Arg Leu
 115 120 125

eolf-seql-S000001.txt

eu Ile Glu Lys Cys Asn Thr Val Lys Met Trp Val Gln Leu Leu Ile
 130 135 140

ro Arg Ile Glu Asp Gly Asn Asn Phe Gly Val Ser Ile Gln Glu Glu
 45 150 155 160

hr Val Ala Glu Leu Arg Thr Val Glu Ser Glu Ala Ala Ser Tyr Leu
 165 170 175

sp Gln Ile Ser Arg Tyr Tyr Ile Thr Arg Ala Lys Leu Val Ser Lys
 180 185 190

le Ala Lys Tyr Pro His Val Glu Asp Tyr Arg Arg Thr Val Thr Glu
 195 200 205

le Asp Glu Lys Glu Tyr Ile Ser Leu Arg Leu Ile Ile Ser Glu Leu
 210 215 220

rg Asn Gln Tyr Val Thr Leu His Asp Met Ile Leu Lys Asn Ile Glu
 25 230 235 240

ys Ile Lys Arg Pro Arg Ser Ser Asn Ala Glu Thr Leu Tyr
 245 250

210> 136

211> 189

212> PRT

213> Homo sapiens

100> 136

st Gly Leu Gly Ala Arg Gly Ala Trp Ala Ala Leu Leu Leu Gly Thr
 5 10 15

eu Gln Val Leu Ala Leu Leu Gly Ala Ala His Glu Ser Ala Ala Met
 20 25 30

a Glu Thr Leu Gln His Val Pro Ser Asp His Thr Asn Glu Thr Ser
 35 40 45

on Ser Thr Val Lys Pro Pro Thr Ser Val Ala Ser Asp Ser Ser Asn
 50 55 60

eolf-seql-S000001.txt

hr Thr Val Thr Thr Met Lys Pro Thr Ala Ala Ser Asn Thr Thr Thr
 5 70 75 80

ro Gly Met Val Ser Thr Asn Met Thr Ser Thr Thr Leu Lys Ser Thr
 85 90 95

ro Lys Thr Thr Ser Val Ser Gln Asn Thr Ser Gln Ile Ser Thr Ser
 100 105 110

ar Met Thr Val Thr His Asn Ser Ser Val Thr Ser Ala Ala Ser Ser
 115 120 125

al Thr Ile Thr Thr Thr Met His Ser Glu Ala Lys Lys Gly Ser Lys
 130 135 140

ne Asp Thr Gly Ser Phe Val Gly Gly Ile Val Leu Thr Leu Gly Val
 145 150 155 160

eu Ser Ile Leu Tyr Ile Gly Cys Lys Met Tyr Tyr Ser Arg Arg Gly
 165 170 175

le Arg Tyr Arg Thr Ile Asp Glu His Asp Ala Ile Ile
 180 185

?10> 137

?11> 2314

?12> PRT

?13> Homo sapiens

!00> 137

st Arg Ile Leu Lys Arg Phe Leu Ala Cys Ile Gln Leu Leu Cys Val
 5 10 15

's Arg Leu Asp Trp Ala Asn Gly Tyr Tyr Arg Gln Gln Arg Lys Leu
 20 25 30

.l Glu Glu Ile Gly Trp Ser Tyr Thr Gly Ala Leu Asn Gln Lys Asn
 35 40 45

p Gly Lys Lys Tyr Pro Thr Cys Asn Ser Pro Lys Gln Ser Pro Ile
 50 55 60

eolf-seql-S000001.txt

```

sn Ile Asp Glu Asp Leu Thr Gln Val Asn Val Asn Leu Lys Lys Leu
5          70          75          80

ys Phe Gln Gly Trp Asp Lys Thr Ser Leu Glu Asn Thr Phe Ile His
      85          90          95

sn Thr Gly Lys Thr Val Glu Ile Asn Leu Thr Asn Asp Tyr Arg Val
      100          105          110

er Gly Gly Val Ser Glu Met Val Phe Lys Ala Ser Lys Ile Thr Phe
      115          120          125

is Trp Gly Lys Cys Asn Met Ser Ser Asp Gly Ser Glu His Ser Leu
      130          135          140

lu Gly Gln Lys Phe Pro Leu Glu Met Gln Ile Tyr Cys Phe Asp Ala
45          150          155          160

sp Arg Phe Ser Ser Phe Glu Glu Ala Val Lys Gly Lys Gly Lys Leu
      165          170          175

rg Ala Leu Ser Ile Leu Phe Glu Val Gly Thr Glu Glu Asn Leu Asp
      180          185          190

ne Lys Ala Ile Ile Asp Gly Val Glu Ser Val Ser Arg Phe Gly Lys
      195          200          205

ln Ala Ala Leu Asp Pro Phe Ile Leu Leu Asn Leu Leu Pro Asn Ser
      210          215          220

ir Asp Lys Tyr Tyr Ile Tyr Asn Gly Ser Leu Thr Ser Pro Pro Cys
25          230          235          240

ir Asp Thr Val Asp Trp Ile Val Phe Lys Asp Thr Val Ser Ile Ser
      245          250          255

u Ser Gln Leu Ala Val Phe Cys Glu Val Leu Thr Met Gln Gln Ser
      260          265          270

y Tyr Val Met Leu Met Asp Tyr Leu Gln Asn Asn Phe Arg Glu Gln
      275          280          285

```


eolf-seql-S000001.txt

```

ln Tyr Lys Phe Ser Arg Gln Val Phe Ser Ser Tyr Thr Gly Lys Glu
 290                               295                               300

lu Ile His Glu Ala Val Cys Ser Ser Glu Pro Glu Asn Val Gln Ala
 05                               310                               315                               320

sp Pro Glu Asn Tyr Thr Ser Leu Leu Val Thr Trp Glu Arg Pro Arg
                               325                               330                               335

al Val Tyr Asp Thr Met Ile Glu Lys Phe Ala Val Leu Tyr Gln Gln
                               340                               345                               350

eu Asp Gly Glu Asp Gln Thr Lys His Glu Phe Leu Thr Asp Gly Tyr
 355                               360                               365

ln Asp Leu Gly Ala Ile Leu Asn Asn Leu Leu Pro Asn Met Ser Tyr
 370                               375                               380

al Leu Gln Ile Val Ala Ile Cys Thr Asn Gly Leu Tyr Gly Lys Tyr
 85                               390                               395                               400

er Asp Gln Leu Ile Val Asp Met Pro Thr Asp Asn Pro Glu Leu Asp
                               405                               410                               415

eu Phe Pro Glu Leu Ile Gly Thr Glu Glu Ile Ile Lys Glu Glu Glu
                               420                               425                               430

lu Gly Lys Asp Ile Glu Glu Gly Ala Ile Val Asn Pro Gly Arg Asp
 435                               440                               445

er Ala Thr Asn Gln Ile Arg Lys Lys Glu Pro Gln Ile Ser Thr Thr
 450                               455                               460

ir His Tyr Asn Arg Ile Gly Thr Lys Tyr Asn Glu Ala Lys Thr Asn
 55                               470                               475                               480

rg Ser Pro Thr Arg Gly Ser Glu Phe Ser Gly Lys Gly Asp Val Pro
                               485                               490                               495

sn Thr Ser Leu Asn Ser Thr Ser Gln Pro Val Thr Lys Leu Ala Thr
 500                               505                               510

```

eolf-seql-S000001.txt

lu Lys Asp Ile Ser Leu Thr Ser Gln Thr Val Thr Glu Leu Pro Pro
 515 520 525

is Thr Val Glu Gly Thr Ser Ala Ser Leu Asn Asp Gly Ser Lys Thr
 530 535 540

al Leu Arg Ser Pro His Met Asn Leu Ser Gly Thr Ala Glu Ser Leu
 45 550 555 560

sn Thr Val Ser Ile Thr Glu Tyr Glu Glu Glu Ser Leu Leu Thr Ser
 565 570 575

he Lys Leu Asp Thr Gly Ala Glu Asp Ser Ser Gly Ser Ser Pro Ala
 580 585 590

hr Ser Ala Ile Pro Phe Ile Ser Glu Asn Ile Ser Gln Gly Tyr Ile
 595 600 605

he Ser Ser Glu Asn Pro Glu Thr Ile Thr Tyr Asp Val Leu Ile Pro
 610 615 620

lu Ser Ala Arg Asn Ala Ser Glu Asp Ser Thr Ser Ser Gly Ser Glu
 25 630 635 640

lu Ser Leu Lys Asp Pro Ser Met Glu Gly Asn Val Trp Phe Pro Ser
 645 650 655

er Thr Asp Ile Thr Ala Gln Pro Asp Val Gly Ser Gly Arg Glu Ser
 660 665 670

ne Leu Gln Thr Asn Tyr Thr Glu Ile Arg Val Asp Glu Ser Glu Lys
 675 680 685

ir Thr Lys Ser Phe Ser Ala Gly Pro Val Met Ser Gln Gly Pro Ser
 690 695 700

al Thr Asp Leu Glu Met Pro His Tyr Ser Thr Phe Ala Tyr Phe Pro
 705 710 715 720

ir Glu Val Thr Pro His Ala Phe Thr Pro Ser Ser Arg Gln Gln Asp

eolf-seql-S000001.txt

725

730

735

eu Val Ser Thr Val Asn Val Val Tyr Ser Gln Thr Thr Gln Pro Val
740 745 750

yr Asn Gly Glu Thr Pro Leu Gln Pro Ser Tyr Ser Ser Glu Val Phe
755 760 765

ro Leu Val Thr Pro Leu Leu Leu Asp Asn Gln Ile Leu Asn Thr Thr
770 775 780

ro Ala Ala Ser Ser Ser Asp Ser Ala Leu His Ala Thr Pro Val Phe
85 790 795 800

ro Ser Val Asp Val Ser Phe Glu Ser Ile Leu Ser Ser Tyr Asp Gly
805 810 815

la Pro Leu Leu Pro Phe Ser Ser Ala Ser Phe Ser Ser Glu Leu Phe
820 825 830

rg His Leu His Thr Val Ser Gln Ile Leu Pro Gln Val Thr Ser Ala
835 840 845

nr Glu Ser Asp Lys Val Pro Leu His Ala Ser Leu Pro Val Ala Gly
850 855 860

ly Asp Leu Leu Leu Glu Pro Ser Leu Ala Gln Tyr Ser Asp Val Leu
855 870 875 880

er Thr Thr His Ala Ala Ser Glu Thr Leu Glu Phe Gly Ser Glu Ser
885 890 895

ly Val Leu Tyr Lys Thr Leu Met Phe Ser Gln Val Glu Pro Pro Ser
900 905 910

er Asp Ala Met Met His Ala Arg Ser Ser Gly Pro Glu Pro Ser Tyr
915 920 925

la Leu Ser Asp Asn Glu Gly Ser Gln His Ile Phe Thr Val Ser Tyr
930 935 940

eolf-seql-S000001.txt

er Ser Ala Ile Pro Val His Asp Ser Val Gly Val Thr Tyr Gln Gly
 45 950 955 960

er Leu Phe Ser Gly Pro Ser His Ile Pro Ile Pro Lys Ser Ser Leu
 965 970 975

le Thr Pro Thr Ala Ser Leu Leu Gln Pro Thr His Ala Leu Ser Gly
 980 985 990

sp Gly Glu Trp Ser Gly Ala Ser Ser Asp Ser Glu Phe Leu Leu Pro
 995 1000 1005

sp Thr Asp Gly Leu Thr Ala Leu Asn Ile Ser Ser Pro Val Ser
 1010 1015 1020

al Ala Glu Phe Thr Tyr Thr Thr Ser Val Phe Gly Asp Asp Asn
 1025 1030 1035

ys Ala Leu Ser Lys Ser Glu Ile Ile Tyr Gly Asn Glu Thr Glu
 1040 1045 1050

eu Gln Ile Pro Ser Phe Asn Glu Met Val Tyr Pro Ser Glu Ser
 1055 1060 1065

ar Val Met Pro Asn Met Tyr Asp Asn Val Asn Lys Leu Asn Ala
 1070 1075 1080

er Leu Gln Glu Thr Ser Val Ser Ile Ser Ser Thr Lys Gly Met
 1085 1090 1095

ie Pro Gly Ser Leu Ala His Thr Thr Thr Lys Val Phe Asp His
 1100 1105 1110

u Ile Ser Gln Val Pro Glu Asn Asn Phe Ser Val Gln Pro Thr
 1115 1120 1125

s Thr Val Ser Gln Ala Ser Gly Asp Thr Ser Leu Lys Pro Val
 1130 1135 1140

u Ser Ala Asn Ser Glu Pro Ala Ser Ser Asp Pro Ala Ser Ser
 1145 1150 1155

eolf-seql-S000001.txt

```

lu Met  Leu Ser Pro Ser Thr  Gln Leu Leu Phe Tyr  Glu Thr Ser
  1160                      1165          1170

la Ser  Phe Ser Thr Glu Val  Leu Leu Gln Pro Ser  Phe Gln Ala
  1175                      1180          1185

er Asp  Val Asp Thr Leu Leu  Lys Thr Val Leu Pro  Ala Val Pro
  1190                      1195          1200

er Asp  Pro Ile Leu Val Glu  Thr Pro Lys Val Asp  Lys Ile Ser
  1205                      1210          1215

er Thr  Met Leu His Leu Ile  Val Ser Asn Ser Ala  Ser Ser Glu
  1220                      1225          1230

sn Met  Leu His Ser Thr Ser  Val Pro Val Phe Asp  Val Ser Pro
  1235                      1240          1245

nr Ser  His Met His Ser Ala  Ser Leu Gln Gly Leu  Thr Ile Ser
  1250                      1255          1260

yr Ala  Ser Glu Lys Tyr Glu  Pro Val Leu Leu Lys  Ser Glu Ser
  1265                      1270          1275

er His  Gln Val Val Pro Ser  Leu Tyr Ser Asn Asp  Glu Leu Phe
  1280                      1285          1290

ln Thr  Ala Asn Leu Glu Ile  Asn Gln Ala His Pro  Pro Lys Gly
  1295                      1300          1305

rg His  Val Phe Ala Thr Pro  Val Leu Ser Ile Asp  Glu Pro Leu
  1310                      1315          1320

sn Thr  Leu Ile Asn Lys Leu  Ile His Ser Asp Glu  Ile Leu Thr
  1325                      1330          1335

er Thr  Lys Ser Ser Val Thr  Gly Lys Val Phe Ala  Gly Ile Pro
  1340                      1345          1350

ur Val  Ala Ser Asp Thr Phe  Val Ser Thr Asp His  Ser Val Pro
  1355                      1360          1365

```

eolf-seql-S000001.txt

le Gly Asn Gly His Val Ala Ile Thr Ala Val Ser Pro His Arg
 1370 1375 1380
 sp Gly Ser Val Thr Ser Thr Lys Leu Leu Phe Pro Ser Lys Ala
 1385 1390 1395
 hr Ser Glu Leu Ser His Ser Ala Lys Ser Asp Ala Gly Leu Val
 1400 1405 1410
 ly Gly Gly Glu Asp Gly Asp Thr Asp Asp Asp Gly Asp Asp Asp
 1415 1420 1425
 sp Asp Arg Asp Ser Asp Gly Leu Ser Ile His Lys Cys Met Ser
 1430 1435 1440
 ys Ser Ser Tyr Arg Glu Ser Gln Glu Lys Val Met Asn Asp Ser
 1445 1450 1455
 sp Thr His Glu Asn Ser Leu Met Asp Gln Asn Asn Pro Ile Ser
 1460 1465 1470
 yr Ser Leu Ser Glu Asn Ser Glu Glu Asp Asn Arg Val Thr Ser
 1475 1480 1485
 al Ser Ser Asp Ser Gln Thr Gly Met Asp Arg Ser Pro Gly Lys
 1490 1495 1500
 er Pro Ser Ala Asn Gly Leu Ser Gln Lys His Asn Asp Gly Lys
 1505 1510 1515
 u Glu Asn Asp Ile Gln Thr Gly Ser Ala Leu Leu Pro Leu Ser
 1520 1525 1530
 o Glu Ser Lys Ala Trp Ala Val Leu Thr Ser Asp Glu Glu Ser
 1535 1540 1545
 y Ser Gly Gln Gly Thr Ser Asp Ser Leu Asn Glu Asn Glu Thr
 1550 1555 1560
 r Thr Asp Phe Ser Phe Ala Asp Thr Asn Glu Lys Asp Ala Asp

eolf-seql-S000001.txt

```

1565                                     1570                                     1575

ly Ile  Leu Ala Ala Gly Asp  Ser Glu Ile Thr Pro  Gly Phe Pro
1580                                     1585                                     1590

ln Ser  Pro Thr Ser Ser Val  Thr Ser Glu Asn Ser  Glu Val Phe
1595                                     1600                                     1605

is Val  Ser Glu Ala Glu Ala  Ser Asn Ser Ser  His  Glu Ser Arg
1610                                     1615                                     1620

le Gly  Leu Ala Glu Gly Leu  Glu Ser Glu Lys Lys  Ala Val Ile
1625                                     1630                                     1635

ro Leu  Val Ile Val Ser Ala  Leu Thr Phe Ile Cys  Leu Val Val
1640                                     1645                                     1650

eu Val  Gly Ile Leu Ile Tyr  Trp Arg Lys Cys Phe  Gln Thr Ala
1655                                     1660                                     1665

is Phe  Tyr Leu Glu Asp Ser  Thr Ser Pro Arg Val  Ile Ser Thr
1670                                     1675                                     1680

ro Pro  Thr Pro Ile Phe Pro  Ile Ser Asp Asp Val  Gly Ala Ile
1685                                     1690                                     1695

ro Ile  Lys His Phe Pro Lys  His Val Ala Asp Leu  His Ala Ser
1700                                     1705                                     1710

er Gly  Phe Thr Glu Glu Phe  Glu Thr Leu Lys Glu  Phe Tyr Gln
1715                                     1720                                     1725

u Val  Gln Ser Cys Thr Val  Asp Leu Gly Ile Thr  Ala Asp Ser
1730                                     1735                                     1740

er Asn  His Pro Asp Asn Lys  His Lys Asn Arg Tyr  Ile Asn Ile
1745                                     1750                                     1755

l Ala  Tyr Asp His Ser Arg  Val Lys Leu Ala Gln  Leu Ala Glu
1760                                     1765                                     1770

```

eolf-seql-S000001.txt

ys Asp Gly Lys Leu Thr Asp Tyr Ile Asn Ala Asn Tyr Val Asp
 1775 1780 1785

ly Tyr Asn Arg Pro Lys Ala Tyr Ile Ala Ala Gln Gly Pro Leu
 1790 1795 1800

ys Ser Thr Ala Glu Asp Phe Trp Arg Met Ile Trp Glu His Asn
 1805 1810 1815

al Glu Val Ile Val Met Ile Thr Asn Leu Val Glu Lys Gly Arg
 1820 1825 1830

rg Lys Cys Asp Gln Tyr Trp Pro Ala Asp Gly Ser Glu Glu Tyr
 1835 1840 1845

ly Asn Phe Leu Val Thr Gln Lys Ser Val Gln Val Leu Ala Tyr
 1850 1855 1860

yr Thr Val Arg Asn Phe Thr Leu Arg Asn Thr Lys Ile Lys Lys
 1865 1870 1875

ly Ser Gln Lys Gly Arg Pro Ser Gly Arg Val Val Thr Gln Tyr
 1880 1885 1890

is Tyr Thr Gln Trp Pro Asp Met Gly Val Pro Glu Tyr Ser Leu
 1895 1900 1905

so Val Leu Thr Phe Val Arg Lys Ala Ala Tyr Ala Lys Arg His
 1910 1915 1920

a Val Gly Pro Val Val Val His Cys Ser Ala Gly Val Gly Arg
 1925 1930 1935

r Gly Thr Tyr Ile Val Leu Asp Ser Met Leu Gln Gln Ile Gln
 1940 1945 1950

s Glu Gly Thr Val Asn Ile Phe Gly Phe Leu Lys His Ile Arg
 1955 1960 1965

r Gln Arg Asn Tyr Leu Val Gln Thr Glu Glu Gln Tyr Val Phe
 1970 1975 1980

eolf-seql-S000001.txt

le	His	Asp	Thr	Leu	Val	Glu	Ala	Ile	Leu	Ser	Lys	Glu	Thr	Glu
	1985					1990					1995			
al	Leu	Asp	Ser	His	Ile	His	Ala	Tyr	Val	Asn	Ala	Leu	Leu	Ile
	2000					2005					2010			
ro	Gly	Pro	Ala	Gly	Lys	Thr	Lys	Leu	Glu	Lys	Gln	Phe	Gln	Leu
	2015					2020					2025			
eu	Ser	Gln	Ser	Asn	Ile	Gln	Gln	Ser	Asp	Tyr	Ser	Ala	Ala	Leu
	2030					2035					2040			
ys	Gln	Cys	Asn	Arg	Glu	Lys	Asn	Arg	Thr	Ser	Ser	Ile	Ile	Pro
	2045					2050					2055			
al	Glu	Arg	Ser	Arg	Val	Gly	Ile	Ser	Ser	Leu	Ser	Gly	Glu	Gly
	2060					2065					2070			
ir	Asp	Tyr	Ile	Asn	Ala	Ser	Tyr	Ile	Met	Gly	Tyr	Tyr	Gln	Ser
	2075					2080					2085			
sn	Glu	Phe	Ile	Ile	Thr	Gln	His	Pro	Leu	Leu	His	Thr	Ile	Lys
	2090					2095					2100			
sp	Phe	Trp	Arg	Met	Ile	Trp	Asp	His	Asn	Ala	Gln	Leu	Val	Val
	2105					2110					2115			
st	Ile	Pro	Asp	Gly	Gln	Asn	Met	Ala	Glu	Asp	Glu	Phe	Val	Tyr
	2120					2125					2130			
tp	Pro	Asn	Lys	Asp	Glu	Pro	Ile	Asn	Cys	Glu	Ser	Phe	Lys	Val
	2135					2140					2145			
ir	Leu	Met	Ala	Glu	Glu	His	Lys	Cys	Leu	Ser	Asn	Glu	Glu	Lys
	2150					2155					2160			
u	Ile	Ile	Gln	Asp	Phe	Ile	Leu	Glu	Ala	Thr	Gln	Asp	Asp	Tyr
	2165					2170					2175			
l	Leu	Glu	Val	Arg	His	Phe	Gln	Cys	Pro	Lys	Trp	Pro	Asn	Pro
	2180					2185					2190			

eolf-seql-S000001.txt

```

sp Ser  Pro Ile Ser Lys Thr  Phe Glu Leu Ile Ser  Val Ile Lys
 2195                2200                2205

lu Glu  Ala Ala Asn Arg Asp  Gly Pro Met Ile Val  His Asp Glu
 2210                2215                2220

is Gly  Gly Val Thr Ala Gly  Thr Phe Cys Ala Leu  Thr Thr Leu
 2225                2230                2235

et His  Gln Leu Glu Lys Glu  Asn Ser Val Asp Val  Tyr Gln Val
 2240                2245                2250

la Lys  Met Ile Asn Leu Met  Arg Pro Gly Val Phe  Ala Asp Ile
 2255                2260                2265

lu Gln  Tyr Gln Phe Leu Tyr  Lys Val Ile Leu Ser  Leu Val Ser
 2270                2275                2280

hr Arg  Gln Glu Glu Asn Pro  Ser Thr Ser Leu Asp  Ser Asn Gly
 2285                2290                2295

la Ala  Leu Pro Asp Gly Asn  Ile Ala Glu Ser Leu  Glu Ser Leu
 2300                2305                2310

```

al

```

210> 138
211> 372
212> PRT
213> Homo sapiens

```

100> 138

```

et Lys Gln Leu Pro Val Leu Glu Pro Gly Asp Lys Pro Arg Lys Ala
      5                10                15

ir Trp Tyr Thr Leu Thr Val Pro Gly Asp Ser Pro Cys Ala Arg Val
      20                25                30

.y His Ser Cys Ser Tyr Leu Pro Pro Val Gly Asn Ala Lys Arg Gly
 35                40                45

```

eolf-seql-S000001.txt

ys Val Phe Ile Val Gly Gly Ala Asn Pro Asn Arg Ser Phe Ser Asp
50 55 60

al His Thr Met Asp Leu Gly Lys His Gln Trp Asp Leu Asp Thr Cys
5 70 75 80

ys Gly Leu Leu Pro Arg Tyr Glu His Ala Ser Phe Ile Pro Ser Cys
85 90 95

ar Pro Asp Arg Ile Trp Val Phe Gly Gly Ala Asn Gln Ser Gly Asn
100 105 110

g Asn Cys Leu Gln Val Leu Asn Pro Glu Thr Arg Thr Trp Thr Thr
115 120 125

o Glu Val Thr Ser Pro Pro Pro Ser Pro Arg Thr Phe His Thr Ser
130 135 140

er Ala Ala Ile Gly Asn Gln Leu Tyr Val Phe Gly Gly Gly Glu Arg
145 150 155 160

y Ala Gln Pro Val Gln Asp Thr Lys Leu His Val Phe Asp Ala Asn
165 170 175

ar Leu Thr Trp Ser Gln Pro Glu Thr Leu Gly Asn Pro Pro Ser Pro
180 185 190

g His Gly His Val Met Val Ala Ala Gly Thr Lys Leu Phe Ile His
195 200 205

y Gly Leu Ala Gly Asp Arg Phe Tyr Asp Asp Leu His Cys Ile Asp
210 215 220

e Ser Asp Met Lys Trp Gln Lys Leu Asn Pro Thr Gly Ala Ala Pro
5 230 235 240

a Gly Cys Ala Ala His Ser Ala Val Ala Met Gly Lys His Val Tyr
245 250 255

e Phe Gly Gly Met Thr Pro Ala Gly Ala Leu Asp Thr Met Tyr Gln

eolf-seql-S000001.txt

260

265

270

yr His Thr Glu Glu Gln His Trp Thr Leu Leu Lys Phe Asp Thr Leu
 275 280 285

eu Pro Pro Gly Arg Leu Asp His Ser Met Cys Ile Ile Pro Trp Pro
 290 295 300

al Thr Cys Ala Ser Glu Lys Glu Asp Ser Asn Ser Leu Thr Leu Asn
 05 310 315 320

is Glu Ala Glu Lys Glu Asp Ser Ala Asp Lys Val Met Ser His Ser
 325 330 335

ly Asp Ser His Glu Glu Ser Gln Thr Ala Thr Leu Leu Cys Leu Val
 340 345 350

he Gly Gly Met Asn Thr Glu Gly Glu Ile Tyr Asp Asp Cys Ile Val
 355 360 365

hr Val Val Asp
 370

210> 139
 211> 425
 212> PRT
 213> Homo sapiens

400> 139

et Ala Asp Lys Glu Ala Ala Phe Asp Asp Ala Val Glu Glu Arg Val
 5 10 15

le Asn Glu Glu Tyr Lys Ile Trp Lys Lys Asn Thr Pro Phe Leu Tyr
 20 25 30

sp Leu Val Met Thr His Ala Leu Glu Trp Pro Ser Leu Thr Ala Gln
 35 40 45

sp Leu Pro Asp Val Thr Arg Pro Glu Gly Lys Asp Phe Ser Ile His
 50 55 60

g Leu Val Leu Gly Thr His Thr Ser Asp Glu Gln Asn His Leu Val

eolf-seql-S000001.txt

5		70		75		80									
le	Ala	Ser	Val	Gln	Leu	Pro	Asn	Asp	Asp	Ala	Gln	Phe	Asp	Ala	Ser
				85					90					95	
is	Tyr	Asp	Ser	Glu	Lys	Gly	Glu	Phe	Gly	Gly	Phe	Gly	Ser	Val	Ser
			100					105					110		
ly	Lys	Ile	Glu	Ile	Glu	Ile	Lys	Ile	Asn	His	Glu	Gly	Glu	Val	Asn
		115					120					125			
rg	Ala	Arg	Tyr	Met	Pro	Gln	Asn	Pro	Cys	Ile	Ile	Ala	Thr	Lys	Thr
	130					135					140				
ro	Ser	Ser	Asp	Val	Leu	Val	Phe	Asp	Tyr	Thr	Lys	His	Pro	Ser	Lys
45					150					155					160
ro	Asp	Pro	Ser	Gly	Glu	Cys	Asn	Pro	Asp	Leu	Arg	Leu	Arg	Gly	His
				165					170					175	
ln	Lys	Glu	Gly	Tyr	Gly	Leu	Ser	Trp	Asn	Pro	Asn	Leu	Ser	Gly	His
			180					185					190		
eu	Leu	Ser	Ala	Ser	Asp	Asp	His	Thr	Ile	Cys	Leu	Trp	Asp	Ile	Ser
		195					200					205			
la	Val	Pro	Lys	Glu	Gly	Lys	Val	Val	Asp	Ala	Lys	Thr	Ile	Phe	Thr
	210					215					220				
y	His	Thr	Ala	Val	Val	Glu	Asp	Val	Ser	Trp	His	Leu	Leu	His	Glu
25					230					235					240
er	Leu	Phe	Gly	Ser	Val	Ala	Asp	Asp	Gln	Lys	Leu	Met	Ile	Trp	Asp
				245					250					255	
ir	Arg	Ser	Asn	Asn	Thr	Ser	Lys	Pro	Ser	His	Ser	Val	Asp	Ala	His
			260					265					270		
ir	Ala	Glu	Val	Asn	Cys	Leu	Ser	Phe	Asn	Pro	Tyr	Ser	Glu	Phe	Ile
		275					280					285			

eolf-seql-S000001.txt

eu Ala Thr Gly Ser Ala Asp Lys Thr Val Ala Leu Trp Asp Leu Arg
 290 295 300

sn Leu Lys Leu Lys Leu His Ser Phe Glu Ser His Lys Asp Glu Ile
 05 310 315 320

he Gln Val Gln Trp Ser Pro His Asn Glu Thr Ile Leu Ala Ser Ser
 325 330 335

ly Thr Asp Arg Arg Leu Asn Val Trp Asp Leu Ser Lys Ile Gly Glu
 340 345 350

lu Gln Ser Pro Glu Asp Ala Glu Asp Gly Pro Pro Glu Leu Leu Phe
 355 360 365

le His Gly Gly His Thr Ala Lys Ile Ser Asp Phe Ser Trp Asn Pro
 370 375 380

sn Glu Pro Trp Val Ile Cys Ser Val Ser Glu Asp Asn Ile Met Gln
 85 390 395 400

al Trp Gln Met Ala Glu Asn Ile Tyr Asn Asp Glu Asp Pro Glu Gly
 405 410 415

er Val Asp Pro Glu Gly Gln Gly Ser
 420 425

210> 140

211> 633

212> PRT

213> Homo sapiens

100> 140

et Asn Pro Ser Ala Pro Ser Tyr Pro Met Ala Ser Leu Tyr Val Gly
 5 10 15

sp Leu His Pro Asp Val Thr Glu Ala Met Leu Tyr Glu Lys Phe Ser
 20 25 30

o Ala Gly Pro Ile Leu Ser Ile Arg Val Cys Arg Asp Met Ile Thr
 35 40 45

eolf-seql-S000001.txt

```

rg Arg Ser Leu Gly Tyr Ala Tyr Val Asn Phe Gln Gln Pro Ala Asp
 50          55          60

la Glu Arg Ala Leu Asp Thr Met Asn Phe Asp Val Ile Lys Gly Lys
 5          70          75          80

ro Val Arg Ile Met Trp Ser Gln Arg Asp Pro Ser Leu Arg Lys Ser
          85          90          95

ly Val Gly Asn Ile Phe Ile Lys Asn Leu Asp Lys Ser Ile Asp Asn
          100          105          110

ys Ala Leu Tyr Asp Thr Phe Ser Ala Phe Gly Asn Ile Leu Ser Cys
          115          120          125

ys Val Val Cys Asp Glu Asn Gly Ser Lys Gly Tyr Gly Phe Val His
 130          135          140

ne Glu Thr Gln Glu Ala Ala Glu Arg Ala Ile Glu Lys Met Asn Gly
 45          150          155          160

et Leu Leu Asn Asp Arg Lys Val Phe Val Gly Arg Phe Lys Ser Arg
          165          170          175

ys Glu Arg Glu Ala Glu Leu Gly Ala Arg Ala Lys Glu Phe Thr Asn
          180          185          190

al Tyr Ile Lys Asn Phe Gly Glu Asp Met Asp Asp Glu Arg Leu Lys
 195          200          205

sp Leu Phe Gly Pro Ala Leu Ser Val Lys Val Met Thr Asp Glu Ser
 210          215          220

.y Lys Ser Lys Gly Phe Gly Phe Val Ser Phe Glu Arg His Glu Asp
 5          230          235          240

a Gln Lys Ala Val Asp Glu Met Asn Gly Lys Glu Leu Asn Gly Lys
          245          250          255

n Ile Tyr Val Gly Arg Ala Gln Lys Lys Val Glu Arg Gln Thr Glu
          260          265          270

```

eolf-seql-S000001.txt

```

eu Lys Arg Lys Phe Glu Gln Met Lys Gln Asp Arg Ile Thr Arg Tyr
   275                               280                       285

ln Gly Val Asn Leu Tyr Val Lys Asn Leu Asp Asp Gly Ile Asp Asp
   290                               295                       300

lu Arg Leu Arg Lys Glu Phe Ser Pro Phe Gly Thr Ile Thr Ser Ala
  05                               310                       315                       320

ys Val Met Met Glu Gly Gly Arg Ser Lys Gly Phe Gly Phe Val Cys
                               325                       330                       335

he Ser Ser Pro Glu Glu Ala Thr Lys Ala Val Thr Glu Met Asn Gly
                               340                       345                       350

rg Ile Val Ala Thr Lys Pro Leu Tyr Val Ala Leu Ala Gln Arg Lys
   355                               360                       365

lu Glu Arg Gln Ala His Leu Thr Asn Gln Tyr Met Gln Arg Met Ala
   370                               375                       380

er Val Arg Ala Val Pro Asn Pro Val Ile Asn Pro Tyr Gln Pro Ala
  35                               390                       395                       400

co Pro Ser Gly Tyr Phe Met Ala Ala Ile Pro Gln Thr Gln Asn Arg
                               405                       410                       415

la Ala Tyr Tyr Pro Pro Ser Gln Val Ala Gln Leu Arg Pro Ser Pro
   420                               425                       430

g Trp Thr Ala Gln Gly Ala Arg Pro His Pro Phe Gln Asn Met Pro
   435                               440                       445

y Ala Ile Arg Pro Ala Ala Pro Arg Pro Pro Phe Ser Thr Met Arg
   450                               455                       460

o Ala Ser Ser Gln Val Pro Arg Val Met Ser Thr Gln Arg Val Ala
  45                               470                       475                       480

n Thr Ser Thr Gln Thr Met Gly Pro Arg Pro Ala Ala Ala Ala Ala
   485                               490                       495

```


eolf-seql-S000001.txt

la Ala Thr Pro Ala Val Arg Thr Val Pro Gln Tyr Lys Tyr Ala Ala
 500 505 510

ly Val Arg Asn Pro Gln Gln His Leu Asn Ala Gln Pro Gln Val Thr
 515 520 525

et Gln Gln Pro Ala Val His Val Gln Gly Gln Glu Pro Leu Thr Ala
 530 535 540

er Met Leu Ala Ser Ala Pro Pro Gln Glu Gln Lys Gln Met Leu Gly
 45 550 555 560

lu Arg Leu Phe Pro Leu Ile Gln Ala Met His Pro Thr Leu Ala Gly
 565 570 575

ys Ile Thr Gly Met Leu Leu Glu Ile Asp Asn Ser Glu Leu Leu His
 580 585 590

et Leu Glu Ser Pro Glu Ser Leu Arg Ser Lys Val Asp Glu Ala Val
 595 600 605

la Val Leu Gln Ala His Gln Ala Lys Glu Ala Ala Gln Lys Ala Val
 610 615 620

sn Ser Ala Thr Gly Val Pro Thr Val
 25 630

?10> 141

?11> 420

?12> PRT

?13> Homo sapiens

!00> 141

st Met Tyr Ser Pro Ile Cys Leu Thr Gln Asp Glu Phe His Pro Phe
 5 10 15

st Glu Ala Leu Leu Pro His Val Arg Ala Ile Ala Tyr Thr Trp Phe
 20 25 30

n Leu Gln Ala Arg Lys Arg Lys Tyr Phe Lys Lys His Glu Lys Arg
 35 40 45

eolf-seql-S000001.txt

et Ser Lys Asp Glu Glu Arg Ala Val Lys Asp Glu Leu Leu Ser Glu
 50 55 60

ys Pro Glu Ile Lys Gln Lys Trp Ala Ser Arg Leu Leu Ala Lys Leu
 5 70 75 80

rg Lys Asp Ile Arg Gln Glu Tyr Arg Glu Asp Phe Val Leu Thr Val
 85 90 95

hr Gly Lys Lys His Pro Cys Cys Val Leu Ser Asn Pro Asp Gln Lys
 100 105 110

ly Lys Ile Arg Arg Ile Asp Cys Leu Arg Gln Ala Asp Lys Val Trp
 115 120 125

rg Leu Asp Leu Val Met Val Ile Leu Phe Lys Gly Ile Pro Leu Glu
 130 135 140

er Thr Asp Gly Glu Arg Leu Met Lys Ser Pro His Cys Thr Asn Pro
 145 150 155 160

la Leu Cys Val Gln Pro His His Ile Thr Val Ser Val Lys Glu Leu
 165 170 175

sp Leu Phe Leu Ala Tyr Tyr Val Gln Glu Gln Asp Ser Gly Gln Ser
 180 185 190

y Ser Pro Ser His Asn Asp Pro Ala Lys Asn Pro Pro Gly Tyr Leu
 195 200 205

u Asp Ser Phe Val Lys Ser Gly Val Phe Asn Val Ser Glu Leu Val
 210 215 220

g Val Ser Arg Thr Pro Ile Thr Gln Gly Thr Gly Val Asn Phe Pro
 225 230 235 240

e Gly Glu Ile Pro Ser Gln Pro Tyr Tyr His Asp Met Asn Ser Gly
 245 250 255

l Asn Leu Gln Arg Ser Leu Ser Ser Pro Pro Ser Ser Lys Arg Pro

eolf-seql-S000001.txt

260

265

270

ys Thr Ile Ser Ile Asp Glu Asn Met Glu Pro Ser Pro Thr Gly Asp
 275 280 285

he Tyr Pro Ser Pro Ser Ser Pro Ala Ala Gly Ser Arg Thr Trp His
 290 295 300

lu Arg Asp Gln Asp Met Ser Ser Pro Thr Thr Met Lys Lys Pro Glu
 305 310 315 320

ys Pro Leu Phe Ser Ser Ala Ser Pro Gln Asp Ser Ser Pro Arg Leu
 325 330 335

er Thr Phe Pro Gln His His His Pro Gly Ile Pro Gly Val Ala His
 340 345 350

er Val Ile Ser Thr Arg Thr Pro Pro Pro Pro Ser Pro Leu Pro Phe
 355 360 365

co Thr Gln Ala Ile Leu Pro Pro Ala Pro Ser Ser Tyr Phe Ser His
 370 375 380

co Thr Ile Arg Tyr Pro Pro His Leu Asn Pro Gln Asp Thr Leu Lys
 385 390 395 400

sn Tyr Val Pro Ser Tyr Asp Pro Ser Ser Pro Gln Thr Ser Gln Ser
 405 410 415

sp Tyr Leu Gly
 420

:10> 142
 :11> 248
 :12> PRT
 :13> Homo sapiens

00> 142

st Glu Gly Val Glu Glu Lys Lys Lys Glu Val Pro Ala Val Pro Glu
 5 10 15

r Leu Lys Lys Lys Arg Arg Asn Phe Ala Glu Leu Lys Ile Lys Arg

eolf-seql-S000001.txt

20

25

30

eu Arg Lys Lys Phe Ala Gln Lys Met Leu Arg Lys Ala Arg Arg Lys
 35 40 45

eu Ile Tyr Glu Lys Ala Lys His Tyr His Lys Glu Tyr Arg Gln Met
 50 55 60

yr Arg Thr Glu Ile Arg Met Ala Arg Met Ala Arg Lys Ala Gly Asn
 5 70 75 80

he Tyr Val Pro Ala Glu Pro Lys Leu Ala Phe Val Ile Arg Ile Arg
 85 90 95

ly Ile Asn Gly Val Ser Pro Lys Val Arg Lys Val Leu Gln Leu Leu
 100 105 110

rg Leu Arg Gln Ile Phe Asn Gly Thr Phe Val Lys Leu Asn Lys Ala
 115 120 125

er Ile Asn Met Leu Arg Ile Val Glu Pro Tyr Ile Ala Trp Gly Tyr
 130 135 140

so Asn Leu Lys Ser Val Asn Glu Leu Ile Tyr Lys Arg Gly Tyr Gly
 15 150 155 160

ys Ile Asn Lys Lys Arg Ile Ala Leu Thr Asp Asn Ala Leu Ile Ala
 165 170 175

rg Ser Leu Gly Lys Tyr Gly Ile Ile Cys Met Glu Asp Leu Ile His
 180 185 190

u Ile Tyr Thr Val Gly Lys Arg Phe Lys Glu Ala Asn Asn Phe Leu
 195 200 205

p Pro Phe Lys Leu Ser Ser Pro Arg Gly Gly Met Lys Lys Lys Thr
 210 215 220

ur His Phe Val Glu Gly Gly Asp Ala Gly Asn Arg Glu Asp Gln Ile
 230 235 240

eolf-seql-S000001.txt

sn Arg Leu Ile Arg Arg Met Asn
245

210> 143
211> 420
212> PRT
213> Homo sapiens

400> 143

et Glu Val Pro Pro Arg Leu Ser His Val Pro Pro Pro Leu Phe Pro
5 10 15

er Ala Pro Ala Thr Leu Ala Ser Arg Ser Leu Ser His Trp Arg Pro
20 25 30

rg Pro Pro Arg Gln Leu Ala Pro Leu Leu Pro Ser Leu Ala Pro Ser
35 40 45

er Ala Arg Gln Gly Ala Arg Arg Ala Gln Arg His Val Thr Ala Gln
50 55 60

ln Pro Ser Arg Leu Ala Gly Gly Ala Ala Ile Lys Gly Gly Arg Arg
5 70 75 80

rg Arg Pro Asp Leu Phe Arg Arg His Phe Lys Ser Ser Ser Ile Gln
85 90 95

rg Ser Ala Ala Ala Ala Ala Ala Thr Arg Thr Ala Arg Gln His Pro
100 105 110

o Ala Asp Ser Ser Val Thr Met Glu Asp Met Asn Glu Tyr Ser Asn
115 120 125

e Glu Glu Phe Ala Glu Gly Ser Lys Ile Asn Ala Ser Lys Asn Gln
130 135 140

n Asp Asp Gly Lys Met Phe Ile Gly Gly Leu Ser Trp Asp Thr Ser
5 150 155 160

s Lys Asp Leu Thr Glu Tyr Leu Ser Arg Phe Gly Glu Val Val Asp
165 170 175

eolf-seql-S000001.txt

ys Thr Ile Lys Thr Asp Pro Val Thr Gly Arg Ser Arg Gly Phe Gly
180 185 190

he Val Leu Phe Lys Asp Ala Ala Ser Val Asp Lys Val Leu Glu Leu
195 200 205

ys Glu His Lys Leu Asp Gly Lys Leu Ile Asp Pro Lys Arg Ala Lys
210 215 220

la Leu Lys Gly Lys Glu Pro Pro Lys Lys Val Phe Val Gly Gly Leu
225 230 235 240

er Pro Asp Thr Ser Glu Glu Gln Ile Lys Glu Tyr Phe Gly Ala Phe
245 250 255

ly Glu Ile Glu Asn Ile Glu Leu Pro Met Asp Thr Lys Thr Asn Glu
260 265 270

rg Arg Gly Phe Cys Phe Ile Thr Tyr Thr Asp Glu Glu Pro Val Lys
275 280 285

ys Leu Leu Glu Ser Arg Tyr His Gln Ile Gly Ser Gly Lys Cys Glu
290 295 300

le Lys Val Ala Gln Pro Lys Glu Val Tyr Arg Gln Gln Gln Gln Gln
305 310 315 320

..n Lys Gly Gly Arg Gly Ala Ala Ala Gly Gly Arg Gly Gly Thr Arg
325 330 335

..y Arg Gly Arg Gly Gln Gly Gln Asn Trp Asn Gln Gly Phe Asn Asn
340 345 350

..r Tyr Asp Gln Gly Tyr Gly Asn Tyr Asn Ser Ala Tyr Gly Gly Asp
355 360 365

..n Asn Tyr Ser Gly Tyr Gly Gly Tyr Asp Tyr Thr Gly Tyr Asn Tyr
370 375 380

..y Asn Tyr Gly Tyr Gly Gln Gly Tyr Ala Asp Tyr Ser Gly Gln Gln
385 390 395 400

eolf-seql-S000001.txt

er Thr Tyr Gly Lys Ala Ser Arg Gly Gly Gly Asn His Gln Asn Asn
 405 410 415

yr Gln Pro Tyr
 420

210> 144
 211> 46
 212> PRT
 213> Homo sapiens

400> 144

et Leu Leu Ser Arg Gly Val Leu Pro Phe Leu Ser Tyr Met Lys Phe
 5 10 15

eu Ser Gln Glu Arg Gln Asp Tyr Ile Phe Phe Phe Phe Phe Ser Ser
 20 25 30

eu Ser Trp Cys Ser Val Phe Leu Val Ile Arg Ile Leu Ile
 35 40 45

210> 145
 211> 76
 212> PRT
 213> Homo sapiens

400> 145

et Ser Lys Ala His Pro Pro Glu Leu Lys Lys Phe Met Asp Lys Lys
 5 10 15

eu Ser Leu Lys Leu Asn Gly Gly Arg His Val Gln Gly Ile Leu Arg
 20 25 30

y Phe Asp Pro Phe Met Asn Leu Val Ile Asp Glu Cys Val Glu Met
 35 40 45

a Thr Ser Gly Gln Gln Asn Asn Ile Gly Met Val Val Ile Arg Gly
 50 55 60

n Ser Ile Ile Met Leu Glu Ala Leu Glu Arg Val
 70 75

eolf-seql-S000001.txt

```

210> 146
211> 184
212> PRT
213> Homo sapiens

400> 146

et Arg Glu Tyr Lys Leu Val Val Leu Gly Ser Gly Gly Val Gly Lys
      5              10              15

er Ala Leu Thr Val Gln Phe Val Gln Gly Ile Phe Val Glu Lys Tyr
      20              25              30

sp Pro Thr Ile Glu Asp Ser Tyr Arg Lys Gln Val Glu Val Asp Cys
      35              40              45

ln Gln Cys Met Leu Glu Ile Leu Asp Thr Ala Gly Thr Glu Gln Phe
      50              55              60

hr Ala Met Arg Asp Leu Tyr Met Lys Asn Gly Gln Gly Phe Ala Leu
      5              70              75              80

al Tyr Ser Ile Thr Ala Gln Ser Thr Phe Asn Asp Leu Gln Asp Leu
      85              90              95

rg Glu Gln Ile Leu Arg Val Lys Asp Thr Glu Asp Val Pro Met Ile
      100             105             110

eu Val Gly Asn Lys Cys Asp Leu Glu Asp Glu Arg Val Val Gly Lys
      115             120             125

lu Gln Gly Gln Asn Leu Ala Arg Gln Trp Cys Asn Cys Ala Phe Leu
      130             135             140

lu Ser Ser Ala Lys Ser Lys Ile Asn Val Asn Glu Ile Phe Tyr Asp
      15             150             155             160

eu Val Arg Gln Ile Asn Arg Lys Thr Pro Val Glu Lys Lys Lys Pro
      165             170             175

's Lys Lys Ser Cys Leu Leu Leu
      180

```


eolf-seql-S000001.txt

```

210> 147
211> 440
212> PRT
213> Homo sapiens

400> 147

et Glu Gln Arg Gly Gln Asn Ala Pro Ala Ala Ser Gly Ala Arg Lys
    5                                10                            15

rg His Gly Pro Gly Pro Arg Glu Ala Arg Gly Ala Arg Pro Gly Leu
    20                                25                            30

rg Val Pro Lys Thr Leu Val Leu Val Val Ala Ala Val Leu Leu Leu
    35                                40                            45

al Ser Ala Glu Ser Ala Leu Ile Thr Gln Gln Asp Leu Ala Pro Gln
    50                                55                            60

ln Arg Ala Ala Pro Gln Gln Lys Arg Ser Ser Pro Ser Glu Gly Leu
    5                                70                            75                            80

's Pro Pro Gly His His Ile Ser Glu Asp Gly Arg Asp Cys Ile Ser
    85                                90                            95

's Lys Tyr Gly Gln Asp Tyr Ser Thr His Trp Asn Asp Leu Leu Phe
    100                               105                            110

's Leu Arg Cys Thr Arg Cys Asp Ser Gly Glu Val Glu Leu Ser Pro
    115                               120                            125

's Thr Thr Thr Arg Asn Thr Val Cys Gln Cys Glu Glu Gly Thr Phe
    130                               135                            140

'g Glu Glu Asp Ser Pro Glu Met Cys Arg Lys Cys Arg Thr Gly Cys
    150                               155                            160

'o Arg Gly Met Val Lys Val Gly Asp Cys Thr Pro Trp Ser Asp Ile
    165                               170                            175

u Cys Val His Lys Glu Ser Gly Thr Lys His Ser Gly Glu Ala Pro
    180                               185                            190

```

eolf-seql-S000001.txt

```

la Val Glu Glu Thr Val Thr Ser Ser Pro Gly Thr Pro Ala Ser Pro
   195                               200                       205

ys Ser Leu Ser Gly Ile Ile Ile Gly Val Thr Val Ala Ala Val Val
   210                               215                       220

eu Ile Val Ala Val Phe Val Cys Lys Ser Leu Leu Trp Lys Lys Val
   25                               230                       235                       240

eu Pro Tyr Leu Lys Gly Ile Cys Ser Gly Gly Gly Gly Asp Pro Glu
   245                               250                       255

rg Val Asp Arg Ser Ser Gln Arg Pro Gly Ala Glu Asp Asn Val Leu
   260                               265                       270

sn Glu Ile Val Ser Ile Leu Gln Pro Thr Gln Val Pro Glu Gln Glu
   275                               280                       285

et Glu Val Gln Glu Pro Ala Glu Pro Thr Gly Val Asn Met Leu Ser
   290                               295                       300

ro Gly Glu Ser Glu His Leu Leu Glu Pro Ala Glu Ala Glu Arg Ser
   305                               310                       315                       320

.n Arg Arg Arg Leu Leu Val Pro Ala Asn Glu Gly Asp Pro Thr Glu
   325                               330                       335

ir Leu Arg Gln Cys Phe Asp Asp Phe Ala Asp Leu Val Pro Phe Asp
   340                               345                       350

er Trp Glu Pro Leu Met Arg Lys Leu Gly Leu Met Asp Asn Glu Ile
   355                               360                       365

's Val Ala Lys Ala Glu Ala Ala Gly His Arg Asp Thr Leu Tyr Thr
   370                               375                       380

t Leu Ile Lys Trp Val Asn Lys Thr Gly Arg Asp Ala Ser Val His
   385                               390                       395                       400

r Leu Leu Asp Ala Leu Glu Thr Leu Gly Glu Arg Leu Ala Lys Gln
   405                               410                       415

```

eolf-seql-S000001.txt

ys Ile Glu Asp His Leu Leu Ser Ser Gly Lys Phe Met Tyr Leu Glu
 420 425 430

ly Asn Ala Asp Ser Ala Met Ser
 435 440

210> 148
 211> 126
 212> PRT
 213> Homo sapiens

100> 148

et Ala Asp Glu Ile Ala Lys Ala Gln Val Ala Arg Pro Gly Gly Asp
 5 10 15

ar Ile Phe Gly Lys Ile Ile Arg Lys Glu Ile Pro Ala Lys Ile Ile
 20 25 30

ie Glu Asp Asp Arg Cys Leu Ala Phe His Asp Ile Ser Pro Gln Ala
 35 40 45

o Thr His Phe Leu Val Ile Pro Lys Lys His Ile Ser Gln Ile Ser
 50 55 60

l Ala Glu Asp Asp Asp Glu Ser Leu Leu Gly His Leu Met Ile Val
 70 75 80

y Lys Lys Cys Ala Ala Asp Leu Gly Leu Asn Lys Gly Tyr Arg Met
 85 90 95

l Val Asn Glu Gly Ser Asp Gly Gly Gln Ser Val Tyr His Val His
 100 105 110

u His Val Leu Gly Gly Arg Gln Met His Trp Pro Pro Gly
 115 120 125

10> 149
 11> 320
 12> PRT
 13> Homo sapiens

00> 149

eolf-seql-S000001.txt

```

et Ala Glu Gly Asp Ala Gly Ser Asp Gln Arg Gln Asn Glu Glu Ile
   5                               10                      15

lu Ala Met Ala Ala Ile Tyr Gly Glu Glu Trp Cys Val Ile Asp Asp
   20                      25                      30

ys Ala Lys Ile Phe Cys Ile Arg Ile Ser Asp Asp Ile Asp Asp Pro
   35                      40                      45

ys Trp Thr Leu Cys Leu Gln Val Met Leu Pro Asn Glu Tyr Pro Gly
   50                      55                      60

hr Ala Pro Pro Ile Tyr Gln Leu Asn Ala Pro Trp Leu Lys Gly Gln
   5                      70                      75                      80

lu Arg Ala Asp Leu Ser Asn Ser Leu Glu Glu Ile Tyr Ile Gln Asn
   85                      90                      95

le Gly Glu Ser Ile Leu Tyr Leu Trp Val Glu Lys Ile Arg Asp Val
  100                      105                      110

eu Ile Gln Lys Ser Gln Met Thr Glu Pro Gly Pro Asp Val Lys Lys
  115                      120                      125

ys Thr Glu Glu Glu Asp Val Glu Cys Glu Asp Asp Leu Ile Leu Ala
  130                      135                      140

ys Gln Pro Glu Ser Ser Val Lys Ala Leu Asp Phe Asp Ile Ser Glu
  145                      150                      155                      160

ir Arg Thr Glu Val Glu Val Glu Glu Leu Pro Pro Ile Asp His Gly
  165                      170                      175

le Pro Ile Thr Asp Arg Arg Ser Thr Phe Gln Ala His Leu Ala Pro
  180                      185                      190

al Val Cys Pro Lys Gln Val Lys Met Val Leu Ser Lys Leu Tyr Glu
  195                      200                      205

in Lys Lys Ile Ala Ser Ala Thr His Asn Ile Tyr Ala Tyr Arg Ile
  210                      215                      220

```

eolf-seql-S000001.txt

yr Cys Glu Asp Lys Gln Thr Phe Leu Gln Asp Cys Glu Asp Asp Gly
25 230 235 240

lu Thr Ala Ala Gly Gly Arg Leu Leu His Leu Met Glu Ile Leu Asn
245 250 255

al Lys Asn Val Met Val Val Val Ser Arg Trp Tyr Gly Gly Ile Leu
260 265 270

eu Gly Pro Asp Arg Phe Lys His Ile Asn Asn Cys Ala Arg Asn Ile
275 280 285

eu Val Glu Lys Asn Tyr Thr Asn Ser Pro Glu Glu Ser Ser Lys Ala
290 295 300

eu Gly Lys Asn Lys Lys Val Arg Lys Asp Lys Lys Arg Asn Glu His
305 310 315 320

210> 150

211> 326

212> PRT

213> Homo sapiens

100> 150

et His Arg Thr Thr Arg Ile Lys Ile Thr Glu Leu Asn Pro His Leu
5 10 15

et Cys Val Leu Cys Gly Gly Tyr Phe Ile Asp Ala Thr Thr Ile Ile
20 25 30

u Cys Leu His Ser Phe Cys Lys Thr Cys Ile Val Arg Tyr Leu Glu
35 40 45

ir Ser Lys Tyr Cys Pro Ile Cys Asp Val Gln Val His Lys Thr Arg
50 55 60

o Leu Leu Asn Ile Arg Ser Asp Lys Thr Leu Gln Asp Ile Val Tyr
70 75 80

s Leu Val Pro Gly Leu Phe Lys Asn Glu Met Lys Arg Arg Arg Asp
85 90 95

eolf-seql-S000001.txt

```

ne Tyr Ala Ala His Pro Ser Ala Asp Ala Ala Asn Gly Ser Asn Glu
      100                      105                      110

sp Arg Gly Glu Val Ala Asp Glu Asp Lys Arg Ile Ile Thr Asp Asp
      115                      120                      125

lu Ile Ile Ser Leu Ser Ile Glu Phe Phe Asp Gln Asn Arg Leu Asp
      130                      135                      140

rg Lys Val Asn Lys Asp Lys Glu Lys Ser Lys Glu Glu Val Asn Asp
15                      150                      155                      160

/s Arg Tyr Leu Arg Cys Pro Ala Ala Met Thr Val Met His Leu Arg
      165                      170                      175

/s Phe Leu Arg Ser Lys Met Asp Ile Pro Asn Thr Phe Gln Ile Asp
      180                      185                      190

al Met Tyr Glu Glu Glu Pro Leu Lys Asp Tyr Tyr Thr Leu Met Asp
      195                      200                      205

e Ala Tyr Ile Tyr Thr Trp Arg Arg Asn Gly Pro Leu Pro Leu Lys
      210                      215                      220

r Arg Val Arg Pro Thr Cys Lys Arg Met Lys Ile Ser His Gln Arg
15                      230                      235                      240

p Gly Leu Thr Asn Ala Gly Glu Leu Glu Ser Asp Ser Gly Ser Asp
      245                      250                      255

s Ala Asn Ser Pro Ala Gly Gly Ile Pro Ser Thr Ser Ser Cys Leu
      260                      265                      270

o Ser Pro Ser Thr Pro Val Gln Ser Pro His Pro Gln Phe Pro His
      275                      280                      285

e Ser Ser Thr Met Asn Gly Thr Ser Asn Ser Pro Ser Gly Asn His
      290                      295                      300

n Ser Ser Phe Ala Asn Arg Pro Arg Lys Ser Ser Val Asn Gly Ser
5                      310                      315                      320

```

eolf-seql-S000001.txt

er Ala Thr Ser Ser Gly
325

210> 151
211> 466
212> PRT
213> Homo sapiens

400> 151

et Val Met Glu Lys Pro Ser Pro Leu Leu Val Gly Arg Glu Phe Val
5 10 15

rg Gln Tyr Tyr Thr Leu Leu Asn Gln Ala Pro Asp Met Leu His Arg
20 25 30

ne Tyr Gly Lys Asn Ser Ser Tyr Val His Gly Gly Leu Asp Ser Asn
35 40 45

ly Lys Pro Ala Asp Ala Val Tyr Gly Gln Lys Glu Ile His Arg Lys
50 55 60

al Met Ser Gln Asn Phe Thr Asn Cys His Thr Lys Ile Arg His Val
70 75 80

sp Ala His Ala Thr Leu Asn Asp Gly Val Val Val Gln Val Met Gly
85 90 95

eu Leu Ser Asn Asn Asn Gln Ala Leu Arg Arg Phe Met Gln Thr Phe
100 105 110

al Leu Ala Pro Glu Gly Ser Val Ala Asn Lys Phe Tyr Val His Asn
115 120 125

sp Ile Phe Arg Tyr Gln Asp Glu Val Phe Gly Gly Phe Val Thr Glu
130 135 140

o Gln Glu Glu Ser Glu Glu Glu Val Glu Glu Pro Glu Glu Arg Gln
150 155 160

n Thr Pro Glu Val Val Pro Asp Asp Ser Gly Thr Phe Tyr Asp Gln
165 170 175

eolf-seql-S000001.txt

la Val Val Ser Asn Asp Met Glu Glu His Leu Glu Glu Pro Val Ala
 180 185 190

lu Pro Glu Pro Asp Pro Glu Pro Glu Pro Glu Gln Glu Pro Val Ser
 195 200 205

lu Ile Gln Glu Glu Lys Pro Glu Pro Val Leu Glu Glu Thr Ala Pro
 210 215 220

lu Asp Ala Gln Lys Ser Ser Ser Pro Ala Pro Ala Asp Ile Ala Gln
 225 230 235 240

lr Val Gln Glu Asp Leu Arg Thr Phe Ser Trp Ala Ser Val Thr Ser
 245 250 255

ls Asn Leu Pro Pro Ser Gly Ala Val Pro Val Thr Gly Ile Pro Pro
 260 265 270

ls Val Val Lys Val Pro Ala Ser Gln Pro Arg Pro Glu Ser Lys Pro
 275 280 285

lu Ser Gln Ile Pro Pro Gln Arg Pro Gln Arg Asp Gln Arg Val Arg
 290 295 300

lu Gln Arg Ile Asn Ile Pro Pro Gln Arg Gly Pro Arg Pro Ile Arg
 305 310 315 320

lu Ala Gly Glu Gln Gly Asp Ile Glu Pro Arg Arg Met Val Arg His
 325 330 335

lo Asp Ser His Gln Leu Phe Ile Gly Asn Leu Pro His Glu Val Asp
 340 345 350

ls Ser Glu Leu Lys Asp Phe Phe Gln Ser Tyr Gly Asn Val Val Glu
 355 360 365

lu Arg Ile Asn Ser Gly Gly Lys Leu Pro Asn Phe Gly Phe Val Val
 370 375 380

le Asp Asp Ser Glu Pro Val Gln Lys Val Leu Ser Asn Arg Pro Ile

eolf-seql-S000001.txt
 35 390 395 400
 et Phe Arg Gly Glu Val Arg Leu Asn Val Glu Glu Lys Lys Thr Arg
 405 410 415
 la Ala Arg Glu Gly Asp Arg Arg Asp Asn Arg Leu Arg Gly Pro Gly
 420 425 430
 ly Pro Arg Gly Gly Leu Gly Gly Gly Met Arg Gly Pro Pro Arg Gly
 435 440 445
 ly Met Val Gln Lys Pro Gly Phe Gly Val Gly Arg Gly Leu Ala Pro
 450 455 460
 :g Gln
 55
 ?10> 152
 ?11> 184
 ?12> PRT
 ?13> Homo sapiens
 !00> 152
 et Pro Gln Ser Lys Ser Arg Lys Ile Ala Ile Leu Gly Tyr Arg Ser
 5 10 15
 l Gly Lys Ser Ser Leu Thr Ile Gln Phe Val Glu Gly Gln Phe Val
 20 25 30
 p Ser Tyr Asp Pro Thr Ile Glu Asn Thr Phe Thr Lys Leu Ile Thr
 35 40 45
 l Asn Gly Gln Glu Tyr His Leu Gln Leu Val Asp Thr Ala Gly Gln
 50 55 60
 p Glu Tyr Ser Ile Phe Pro Gln Thr Tyr Ser Ile Asp Ile Asn Gly
 70 75 80
 r Ile Leu Val Tyr Ser Val Thr Ser Ile Lys Ser Phe Glu Val Ile
 85 90 95
 s Val Ile His Gly Lys Leu Leu Asp Met Val Gly Lys Val Gln Ile

eolf-seql-S000001.txt

100

105

110

ro Ile Met Leu Val Gly Asn Lys Lys Asp Leu His Met Glu Arg Val
 115 120 125

le Ser Tyr Glu Glu Gly Lys Ala Leu Ala Glu Ser Trp Asn Ala Ala
 130 135 140

ne Leu Glu Ser Ser Ala Lys Glu Asn Gln Thr Ala Val Asp Val Phe
 145 150 155 160

rg Arg Ile Ile Leu Glu Ala Glu Lys Met Asp Gly Ala Ala Ser Gln
 165 170 175

ly Lys Ser Ser Cys Ser Val Met
 180

210> 153

211> 332

212> PRT

213> Homo sapiens

100> 153

et Gly Ala Gln Phe Ser Lys Thr Ala Ala Lys Gly Glu Ala Ala Ala
 5 10 15

u Arg Pro Gly Glu Ala Ala Val Ala Ser Ser Pro Ser Lys Ala Asn
 20 25 30

y Gln Glu Asn Gly His Val Lys Val Asn Gly Asp Ala Ser Pro Ala
 35 40 45

a Ala Glu Ser Gly Ala Lys Glu Glu Leu Gln Ala Asn Gly Ser Ala
 50 55 60

o Ala Ala Asp Lys Glu Glu Pro Ala Ala Ala Gly Ser Gly Ala Ala
 70 75 80

r Pro Ser Ser Ala Glu Lys Gly Glu Pro Ala Ala Ala Ala Pro
 85 90 95

u Ala Gly Ala Ser Pro Val Glu Lys Glu Ala Pro Ala Glu Gly Glu

eolf-seql-S000001.txt

100		105		110
la Ala Glu Pro Gly Ser Ala Thr Ala Ala Glu Gly Glu Ala Ala Ser	115	120		125
la Ala Ser Ser Thr Ser Ser Pro Lys Ala Glu Asp Gly Ala Thr Pro	130	135		140
er Pro Ser Asn Glu Thr Pro Lys Lys Lys Lys Lys Arg Phe Ser Phe	15	150		155
ys Lys Ser Phe Lys Leu Ser Gly Phe Ser Phe Lys Lys Asn Lys Lys	165	170		175
lu Ala Gly Glu Gly Gly Glu Ala Glu Ala Pro Ala Ala Glu Gly Gly	180	185		190
ys Asp Glu Ala Ala Gly Gly Ala Ala Ala Ala Ala Ala Glu Ala Gly	195	200		205
a Ala Ser Gly Glu Gln Ala Ala Ala Pro Gly Glu Glu Ala Ala Ala	210	215		220
y Glu Glu Gly Ala Ala Gly Gly Asp Pro Gln Glu Ala Lys Pro Gln	23	230		235
u Ala Ala Val Ala Pro Glu Lys Pro Pro Ala Ser Asp Glu Thr Lys	245	250		255
a Ala Glu Glu Pro Ser Lys Val Glu Glu Lys Lys Ala Glu Glu Ala	260	265		270
y Ala Ser Ala Ala Ala Cys Glu Ala Pro Ser Ala Ala Gly Pro Gly	275	280		285
a Pro Pro Glu Gln Glu Ala Ala Pro Ala Glu Glu Pro Ala Ala Ala	290	295		300
a Ala Ser Ser Ala Cys Ala Ala Pro Ser Gln Glu Ala Gln Pro Glu	5	310		315
				320

eolf-seql-S000001.txt

ys Ser Pro Glu Ala Pro Pro Ala Glu Ala Ala Glu
 325 330

210> 154
 211> 86
 212> PRT
 213> Homo sapiens

400> 154

et Pro Gln Tyr Gln Thr Trp Glu Glu Phe Ser Arg Ala Ala Glu Lys
 5 10 15

eu Tyr Leu Ala Asp Pro Met Lys Ala Arg Val Val Leu Lys Tyr Arg
 20 25 30

ls Ser Asp Gly Asn Leu Cys Val Lys Val Thr Asp Asp Leu Val Cys
 35 40 45

eu Val Tyr Lys Thr Asp Gln Ala Gln Asp Val Lys Lys Ile Glu Lys
 50 55 60

ne His Ser Gln Leu Met Arg Leu Met Val Ala Lys Glu Ala Arg Asn
 70 75 80

al Thr Met Glu Thr Glu
 85

210> 155
 211> 480
 212> PRT
 213> Homo sapiens

400> 155

et Ile Arg Ala Ala Pro Pro Pro Leu Phe Leu Leu Leu Leu Leu Leu
 5 10 15

eu Leu Leu Val Ser Trp Ala Ser Arg Gly Glu Ala Ala Pro Asp Gln
 20 25 30

p Glu Ile Gln Arg Leu Pro Gly Leu Ala Lys Gln Pro Ser Phe Arg
 35 40 45

n Tyr Ser Gly Tyr Leu Lys Ser Ser Gly Ser Lys His Leu His Tyr

eolf-seq1-S000001.txt

```

50                                     55                                     60
p Phe Val Glu Ser Gln Lys Asp Pro Glu Asn Ser Pro Val Val Leu
5                                     70                                     75                                     80
p Leu Asn Gly Gly Pro Gly Cys Ser Ser Leu Asp Gly Leu Leu Thr
85                                     90                                     95
u His Gly Pro Phe Leu Val Gln Pro Asp Gly Val Thr Leu Glu Tyr
100                                     105                                     110
n Pro Tyr Ser Trp Asn Leu Ile Ala Asn Val Leu Tyr Leu Glu Ser
115                                     120                                     125
o Ala Gly Val Gly Phe Ser Tyr Ser Asp Asp Lys Phe Tyr Ala Thr
130                                     135                                     140
n Asp Thr Glu Val Ala Gln Ser Asn Phe Glu Ala Leu Gln Asp Phe
15                                     150                                     155                                     160
e Arg Leu Phe Pro Glu Tyr Lys Asn Asn Lys Leu Phe Leu Thr Gly
165                                     170                                     175
u Ser Tyr Ala Gly Ile Tyr Ile Pro Thr Leu Ala Val Leu Val Met
180                                     185                                     190
n Asp Pro Ser Met Asn Leu Gln Gly Leu Ala Val Gly Asn Gly Leu
195                                     200                                     205
r Ser Tyr Glu Gln Asn Asp Asn Ser Leu Val Tyr Phe Ala Tyr Tyr
210                                     215                                     220
s Gly Leu Leu Gly Asn Arg Leu Trp Ser Ser Leu Gln Thr His Cys
5                                     230                                     235                                     240
s Ser Gln Asn Lys Cys Asn Phe Tyr Asp Asn Lys Asp Leu Glu Cys
245                                     250                                     255
l Thr Asn Leu Gln Glu Val Ala Arg Ile Val Gly Asn Ser Gly Leu
260                                     265                                     270

```

eolf-seql-S000001.txt

sn Ile Tyr Asn Leu Tyr Ala Pro Cys Ala Gly Gly Val Pro Ser His
 275 280 285

ie Arg Tyr Glu Lys Asp Thr Val Val Val Gln Asp Leu Gly Asn Ile
 290 295 300

ie Thr Arg Leu Pro Leu Lys Arg Met Trp His Gln Ala Leu Leu Arg
 305 310 315 320

er Gly Asp Lys Val Arg Met Asp Pro Pro Cys Thr Asn Thr Thr Ala
 325 330 335

la Ser Thr Tyr Leu Asn Asn Pro Tyr Val Arg Lys Ala Leu Asn Ile
 340 345 350

o Glu Gln Leu Pro Gln Trp Asp Met Cys Asn Phe Leu Val Asn Leu
 355 360 365

n Tyr Arg Arg Leu Tyr Arg Ser Met Asn Ser Gln Tyr Leu Lys Leu
 370 375 380

u Ser Ser Gln Lys Tyr Gln Ile Leu Leu Tyr Asn Gly Asp Val Asp
 385 390 395 400

t Ala Cys Asn Phe Met Gly Asp Glu Trp Phe Val Asp Ser Leu Asn
 405 410 415

n Lys Met Glu Val Gln Arg Arg Pro Trp Leu Val Lys Tyr Gly Asp
 420 425 430

r Gly Glu Gln Ile Ala Gly Phe Val Lys Glu Phe Ser His Ile Ala
 435 440 445

e Leu Thr Ile Lys Gly Ala Gly His Met Val Pro Thr Asp Lys Pro
 450 455 460

u Ala Ala Phe Thr Met Phe Ser Arg Phe Leu Asn Lys Gln Pro Tyr
 465 470 475 480

10> 156
 11> 217
 12> PRT

eolf-seql-S000001.txt

213> Homo sapiens

100> 156

et Glu Ala Ile Ala Lys Tyr Asp Phe Lys Ala Thr Ala Asp Asp Glu
 5 10 15

eu Ser Phe Lys Arg Gly Asp Ile Leu Lys Val Leu Asn Glu Glu Cys
 20 25 30

sp Gln Asn Trp Tyr Lys Ala Glu Leu Asn Gly Lys Asp Gly Phe Ile
 35 40 45

to Lys Asn Tyr Ile Glu Met Lys Pro His Pro Trp Phe Phe Gly Lys
 50 55 60

le Pro Arg Ala Lys Ala Glu Glu Met Leu Ser Lys Gln Arg His Asp
 70 75 80

ly Ala Phe Leu Ile Arg Glu Ser Glu Ser Ala Pro Gly Asp Phe Ser
 85 90 95

eu Ser Val Lys Phe Gly Asn Asp Val Gln His Phe Lys Val Leu Arg
 100 105 110

p Gly Ala Gly Lys Tyr Phe Leu Trp Val Val Lys Phe Asn Ser Leu
 115 120 125

n Glu Leu Val Asp Tyr His Arg Ser Thr Ser Val Ser Arg Asn Gln
 130 135 140

n Ile Phe Leu Arg Asp Ile Glu Gln Val Pro Gln Gln Pro Thr Tyr
 5 150 155 160

l Gln Ala Leu Phe Asp Phe Asp Pro Gln Glu Asp Gly Glu Leu Gly
 165 170 175

e Arg Arg Gly Asp Phe Ile His Val Met Asp Asn Ser Asp Pro Asn
 180 185 190

p Trp Lys Gly Ala Cys His Gly Gln Thr Gly Met Phe Pro Arg Asn
 195 200 205

eolf-seql-S000001.txt

yr Val Thr Pro Val Asn Arg Asn Val
 210 215

210> 157
 211> 704
 212> PRT
 213> Homo sapiens

100> 157

at Ala Arg Glu Leu Arg Ala Leu Leu Leu Trp Gly Arg Arg Leu Arg
 5 10 15

co Leu Leu Arg Ala Pro Ala Leu Ala Ala Val Pro Gly Gly Lys Pro
 20 25 30

le Leu Cys Pro Arg Arg Thr Thr Ala Gln Leu Gly Pro Arg Arg Asn
 35 40 45

co Ala Trp Ser Leu Gln Ala Gly Arg Leu Phe Ser Thr Gln Thr Ala
 50 55 60

u Asp Lys Glu Glu Pro Leu His Ser Ile Ile Ser Ser Thr Glu Ser
 70 75 80

al Gln Gly Ser Thr Ser Lys His Glu Phe Gln Ala Glu Thr Lys Lys
 85 90 95

u Leu Asp Ile Val Ala Arg Ser Leu Tyr Ser Glu Lys Glu Val Phe
 100 105 110

e Arg Glu Leu Ile Ser Asn Ala Ser Asp Ala Leu Glu Lys Leu Arg
 115 120 125

s Lys Leu Val Ser Asp Gly Gln Ala Leu Pro Glu Met Glu Ile His
 130 135 140

u Gln Thr Asn Ala Glu Lys Gly Thr Ile Thr Ile Gln Asp Thr Gly
 150 155 160

e Gly Met Thr Gln Glu Glu Leu Val Ser Asn Leu Gly Thr Ile Ala
 165 170 175

eolf-seql-S000001.txt

rg Ser Gly Ser Lys Ala Phe Leu Asp Ala Leu Gln Asn Gln Ala Glu
 180 185 190

la Ser Ser Lys Ile Ile Gly Gln Phe Gly Val Gly Phe Tyr Ser Ala
 195 200 205

ne Met Val Ala Asp Arg Val Glu Val Tyr Ser Arg Ser Ala Ala Pro
 210 215 220

ly Ser Leu Gly Tyr Gln Trp Leu Ser Asp Gly Ser Gly Val Phe Glu
 225 230 235 240

le Ala Glu Ala Ser Gly Val Arg Thr Gly Thr Lys Ile Ile Ile His
 245 250 255

eu Lys Ser Asp Cys Lys Glu Phe Ser Ser Glu Ala Arg Val Arg Asp
 260 265 270

al Val Thr Lys Tyr Ser Asn Phe Val Ser Phe Pro Leu Tyr Leu Asn
 275 280 285

y Arg Arg Met Asn Thr Leu Gln Ala Ile Trp Met Met Asp Pro Lys
 290 295 300

p Val Gly Glu Trp Gln His Glu Glu Phe Tyr Arg Tyr Val Ala Gln
 305 310 315 320

a His Asp Lys Pro Arg Tyr Thr Leu His Tyr Lys Thr Asp Ala Pro
 325 330 335

u Asn Ile Arg Ser Ile Phe Tyr Val Pro Asp Met Lys Pro Ser Met
 340 345 350

e Asp Val Ser Arg Glu Leu Gly Ser Ser Val Ala Leu Tyr Ser Arg
 355 360 365

s Val Leu Ile Gln Thr Lys Ala Thr Asp Ile Leu Pro Lys Trp Leu
 370 375 380

g Phe Ile Arg Gly Val Val Asp Ser Glu Asp Ile Pro Leu Asn Leu
 385 390 395 400

eolf-seql-S000001.txt

```

er Arg Glu Leu Leu Gln Glu Ser Ala Leu Ile Arg Lys Leu Arg Asp
      405                      410                      415

al Leu Gln Gln Arg Leu Ile Lys Phe Phe Ile Asp Gln Ser Lys Lys
      420                      425                      430

sp Ala Glu Lys Tyr Ala Lys Phe Phe Glu Asp Tyr Gly Leu Phe Met
      435                      440                      445

g Glu Gly Ile Val Thr Ala Thr Glu Gln Glu Val Lys Glu Asp Ile
      450                      455                      460

a Lys Leu Leu Arg Tyr Glu Ser Ser Ala Leu Pro Ser Gly Gln Leu
5      470                      475                      480

r Ser Leu Ser Glu Tyr Ala Ser Arg Met Arg Ala Gly Thr Arg Asn
      485                      490                      495

e Tyr Tyr Leu Cys Ala Pro Asn Arg His Leu Ala Glu His Ser Pro
      500                      505                      510

r Tyr Glu Ala Met Lys Lys Lys Asp Thr Glu Val Leu Phe Cys Phe
      515                      520                      525

u Gln Phe Asp Glu Leu Thr Leu Leu His Leu Arg Glu Phe Asp Lys
      530                      535                      540

s Lys Leu Ile Ser Val Glu Thr Asp Ile Val Val Asp His Tyr Lys
5      550                      555                      560

u Glu Lys Phe Glu Asp Arg Ser Pro Ala Ala Glu Cys Leu Ser Glu
      565                      570                      575

s Glu Thr Glu Glu Leu Met Ala Trp Met Arg Asn Val Leu Gly Ser
      580                      585                      590

g Val Thr Asn Val Lys Val Thr Leu Arg Leu Asp Thr His Pro Ala
      595                      600                      605

t Val Thr Val Leu Glu Met Gly Ala Ala Arg His Phe Leu Arg Met

```

eolf-seql-S000001.txt

610

615

620

ln Gln Leu Ala Lys Thr Gln Glu Glu Arg Ala Gln Leu Leu Gln Pro
 25 630 635 640

hr Leu Glu Ile Asn Pro Arg His Ala Leu Ile Lys Lys Leu Asn Gln
 645 650 655

eu Arg Ala Ser Glu Pro Gly Leu Ala Gln Leu Leu Val Asp Gln Ile
 660 665 670

yr Glu Asn Ala Met Ile Ala Ala Gly Leu Val Asp Asp Pro Arg Ala
 675 680 685

et Val Gly Arg Leu Asn Glu Leu Leu Val Lys Ala Leu Glu Arg His
 690 695 700

?10> 158

?11> 359

?12> PRT

?13> Homo sapiens

.00> 158

t Ala Ala Val Ser Gly Leu Val Arg Arg Pro Leu Arg Glu Val Ser
 5 10 15

y Leu Leu Lys Arg Arg Phe His Trp Thr Ala Pro Ala Ala Leu Gln
 20 25 30

l Thr Val Arg Asp Ala Ile Asn Gln Gly Met Asp Glu Glu Leu Glu
 35 40 45

g Asp Glu Lys Val Phe Leu Leu Gly Glu Glu Val Ala Gln Tyr Asp
 50 55 60

/ Ala Tyr Lys Val Ser Arg Gly Leu Trp Lys Lys Tyr Gly Asp Lys
 70 75 80

; Ile Ile Asp Thr Pro Ile Ser Glu Met Gly Phe Ala Gly Ile Ala
 85 90 95

. Gly Ala Ala Met Ala Gly Leu Arg Pro Ile Cys Glu Phe Met Thr

eolf-seql-S000001.txt

100

105

110

ne Asn Phe Ser Met Gln Ala Ile Asp Gln Val Ile Asn Ser Ala Ala
 115 120 125

ys Thr Tyr Tyr Met Ser Gly Gly Leu Gln Pro Val Pro Ile Val Phe
 130 135 140

eg Gly Pro Asn Gly Ala Ser Ala Gly Val Ala Ala Gln His Ser Gln
 15 150 155 160

ys Phe Ala Ala Trp Tyr Gly His Cys Pro Gly Leu Lys Val Val Ser
 165 170 175

co Trp Asn Ser Glu Asp Ala Lys Gly Leu Ile Lys Ser Ala Ile Arg
 180 185 190

sp Asn Asn Pro Val Val Val Leu Glu Asn Glu Leu Met Tyr Gly Val
 195 200 205

co Phe Glu Phe Leu Pro Glu Ala Gln Ser Lys Asp Phe Leu Ile Pro
 210 215 220

le Gly Lys Ala Lys Ile Glu Arg Gln Gly Thr His Ile Thr Val Val
 230 235 240

er His Ser Arg Pro Val Gly His Cys Leu Glu Ala Ala Ala Val Leu
 245 250 255

er Lys Glu Gly Val Glu Cys Glu Val Ile Asn Met Arg Thr Ile Arg
 260 265 270

co Met Asp Met Glu Thr Ile Glu Ala Ser Val Met Lys Thr Asn His
 275 280 285

u Val Thr Val Glu Gly Gly Trp Pro Gln Phe Gly Val Gly Ala Glu
 290 295 300

e Cys Ala Arg Ile Met Glu Gly Pro Ala Phe Asn Phe Leu Asp Ala
 310 315 320

eolf-seql-S000001.txt

o Ala Val Arg Val Thr Gly Ala Asp Val Pro Met Pro Tyr Ala Lys
 325 330 335

e Leu Glu Asp Asn Ser Ile Pro Gln Val Lys Asp Ile Ile Phe Ala
 340 345 350

e Lys Lys Thr Leu Asn Ile
 355

10> 159
 11> 113
 12> PRT
 13> Homo sapiens

00> 159

t Ser Ala Ser Val Val Ser Val Ile Ser Arg Phe Leu Glu Glu Tyr
 5 10 15

u Ser Ser Thr Pro Gln Arg Leu Lys Leu Leu Asp Ala Tyr Leu Leu
 20 25 30

r Ile Leu Leu Thr Gly Ala Leu Gln Phe Gly Tyr Cys Leu Leu Val
 35 40 45

y Thr Phe Pro Phe Asn Ser Phe Leu Ser Gly Phe Ile Ser Cys Val
 50 55 60

y Ser Phe Ile Leu Ala Val Cys Leu Arg Ile Gln Ile Asn Pro Gln
 70 75 80

n Lys Ala Asp Phe Gln Gly Ile Ser Pro Glu Arg Ala Phe Ala Asp
 85 90 95

e Leu Phe Ala Ser Thr Ile Leu His Leu Val Val Met Asn Phe Val
 100 105 110

y

10> 160
 11> 239
 12> PRT
 13> Homo sapiens

eolf-seql-S000001.txt

400> 160

et Ala Lys Pro Cys Gly Val Arg Leu Ser Gly Glu Ala Arg Lys Gln
 5 10 15

al Glu Val Phe Arg Gln Asn Leu Phe Gln Glu Ala Glu Glu Phe Leu
 20 25 30

yr Arg Phe Leu Pro Gln Lys Ile Ile Tyr Leu Asn Gln Leu Leu Gln
 35 40 45

lu Asp Ser Leu Asn Val Ala Asp Leu Thr Ser Leu Arg Ala Pro Leu
 50 55 60

sp Ile Pro Ile Pro Asp Pro Pro Pro Lys Asp Asp Glu Met Glu Thr
 70 75 80

sp Lys Gln Glu Lys Lys Glu Val His Lys Cys Gly Phe Leu Pro Gly
 85 90 95

sn Glu Lys Val Leu Ser Leu Leu Ala Leu Val Lys Pro Glu Val Trp
 100 105 110

ir Leu Lys Glu Lys Cys Ile Leu Val Ile Thr Trp Ile Gln His Leu
 115 120 125

le Pro Lys Ile Glu Asp Gly Asn Asp Phe Gly Val Ala Ile Gln Glu
 130 135 140

ss Val Leu Glu Arg Val Asn Ala Val Lys Thr Lys Val Glu Ala Phe
 15 150 155 160

nn Thr Thr Ile Ser Lys Tyr Phe Ser Glu Arg Gly Asp Ala Val Ala
 165 170 175

ss Ala Ser Lys Glu Thr His Val Met Asp Tyr Arg Ala Leu Val His
 180 185 190

uu Arg Asp Glu Ala Ala Tyr Gly Glu Leu Arg Ala Met Val Leu Asp
 195 200 205

eolf-seql-S000001.txt

eu Arg Ala Phe Tyr Ala Glu Leu Tyr His Ile Ile Ser Ser Asn Leu
 210 215 220

lu Lys Ile Val Asn Pro Lys Gly Glu Glu Lys Pro Ser Met Tyr
 225 230 235

210> 161
 211> 111
 212> PRT
 213> Homo sapiens

100> 161

et Ala Gly Lys Gln Ala Val Ser Ala Ser Gly Lys Trp Leu Asp Gly
 5 10 15

le Arg Lys Trp Tyr Tyr Asn Ala Ala Gly Phe Asn Lys Leu Gly Leu
 20 25 30

et Arg Asp Asp Thr Ile Tyr Glu Asp Glu Asp Val Lys Glu Ala Ile
 35 40 45

g Arg Leu Pro Glu Asn Leu Tyr Asn Asp Arg Met Phe Arg Ile Lys
 50 55 60

g Ala Leu Asp Leu Asn Leu Lys His Gln Ile Leu Pro Lys Glu Gln
 70 75 80

p Thr Lys Tyr Glu Glu Glu Asn Phe Tyr Leu Glu Pro Tyr Leu Lys
 85 90 95

u Val Ile Arg Glu Arg Lys Glu Arg Glu Glu Trp Ala Lys Lys
 100 105 110

10> 162
 11> 106
 12> PRT
 13> Homo sapiens

00> 162

t Ser Ser Leu Ser Glu Tyr Ala Phe Arg Met Ser Arg Leu Ser Ala
 5 10 15

g Leu Phe Gly Glu Val Thr Arg Pro Thr Asn Ser Lys Ser Met Lys

eolf-seql-S000001.txt

20

25

30

al Val Lys Leu Phe Ser Glu Leu Pro Leu Ala Lys Lys Lys Glu Thr
 35 40 45

yr Asp Trp Tyr Pro Asn His His Thr Tyr Ala Glu Leu Met Gln Thr
 50 55 60

eu Arg Phe Leu Gly Leu Tyr Arg Asp Glu His Gln Asp Phe Met Asp
 5 70 75 80

lu Gln Lys Arg Leu Lys Lys Leu Arg Gly Lys Glu Lys Pro Lys Lys
 85 90 95

ly Glu Gly Lys Arg Ala Ala Lys Arg Lys
 100 105

?10> 163

?11> 180

?12> PRT

?13> Homo sapiens

!00> 163

st Gly Leu Thr Ile Ser Ser Leu Phe Ser Arg Leu Phe Gly Lys Lys
 5 10 15

n Met Arg Ile Leu Met Val Gly Leu Asp Ala Ala Gly Lys Thr Thr
 20 25 30

e Leu Tyr Lys Leu Lys Leu Gly Glu Ile Val Thr Thr Ile Pro Thr
 35 40 45

e Gly Phe Asn Val Glu Thr Val Glu Tyr Lys Asn Ile Cys Phe Thr
 50 55 60

l Trp Asp Val Gly Gly Gln Asp Arg Ile Arg Pro Leu Trp Lys His
 70 75 80

r Phe Gln Asn Thr Gln Gly Leu Ile Phe Val Val Asp Ser Asn Asp
 85 90 95

g Glu Arg Ile Gln Glu Val Ala Asp Glu Leu Gln Lys Met Leu Leu

eolf-seql-S000001.txt

100

105

110

al Asp Glu Leu Arg Asp Ala Val Leu Leu Leu Phe Ala Asn Lys Gln
 115 120 125

sp Leu Pro Asn Ala Met Ala Ile Ser Glu Met Thr Asp Lys Leu Gly
 130 135 140

eu Gln Ser Leu Arg Asn Arg Thr Trp Tyr Val Gln Ala Thr Cys Ala
 15 150 155 160

ir Gln Gly Thr Gly Leu Tyr Glu Gly Leu Asp Trp Leu Ser Asn Glu
 165 170 175

eu Ser Lys Arg
 180

10> 164

11> 1140

12> PRT

13> Homo sapiens

00> 164

t Ser Tyr Asn Tyr Val Val Thr Ala Gln Lys Pro Thr Ala Val Asn
 5 10 15

y Cys Val Thr Gly His Phe Thr Ser Ala Glu Asp Leu Asn Leu Leu
 20 25 30

e Ala Lys Asn Thr Arg Leu Glu Ile Tyr Val Val Thr Ala Glu Gly
 35 40 45

u Arg Pro Val Lys Glu Val Gly Met Tyr Gly Lys Ile Ala Val Met
 50 55 60

u Leu Phe Arg Pro Lys Gly Glu Ser Lys Asp Leu Leu Phe Ile Leu
 70 75 80

r Ala Lys Tyr Asn Ala Cys Ile Leu Glu Tyr Lys Gln Ser Gly Glu
 85 90 95

r Ile Asp Ile Ile Thr Arg Ala His Gly Asn Val Gln Asp Arg Ile

eolf-seql-S000001.txt

100

105

110

ly Arg Pro Ser Glu Thr Gly Ile Ile Gly Ile Ile Asp Pro Glu Cys
 115 120 125

g Met Ile Gly Leu Arg Leu Tyr Asp Gly Leu Phe Lys Val Ile Pro
 130 135 140

u Asp Arg Asp Asn Lys Glu Leu Lys Ala Phe Asn Ile Arg Leu Glu
 15 150 155 160

u Leu His Val Ile Asp Val Lys Phe Leu Tyr Gly Cys Gln Ala Pro
 165 170 175

r Ile Cys Phe Val Tyr Gln Asp Pro Gln Gly Arg His Val Lys Thr
 180 185 190

r Glu Val Ser Leu Arg Glu Lys Glu Phe Asn Lys Gly Pro Trp Lys
 195 200 205

n Glu Asn Val Glu Ala Glu Ala Ser Met Val Ile Ala Val Pro Glu
 210 215 220

o Phe Gly Gly Ala Ile Ile Ile Gly Gln Glu Ser Ile Thr Tyr His
 5 230 235 240

n Gly Asp Lys Tyr Leu Ala Ile Ala Pro Pro Ile Ile Lys Gln Ser
 245 250 255

r Ile Val Cys His Asn Arg Val Asp Pro Asn Gly Ser Arg Tyr Leu
 260 265 270

u Gly Asp Met Glu Gly Arg Leu Phe Met Leu Leu Leu Glu Lys Glu
 275 280 285

u Gln Met Asp Gly Thr Val Thr Leu Lys Asp Leu Arg Val Glu Leu
 290 295 300

u Gly Glu Thr Ser Ile Ala Glu Cys Leu Thr Tyr Leu Asp Asn Gly
 5 310 315 320

eolf-seql-S000001.txt

al Val Phe Val Gly Ser Arg Leu Gly Asp Ser Gln Leu Val Lys Leu
 325 330 335

n Val Asp Ser Asn Glu Gln Gly Ser Tyr Val Val Ala Met Glu Thr
 340 345 350

e Thr Asn Leu Gly Pro Ile Val Asp Met Cys Val Val Asp Leu Glu
 355 360 365

g Gln Gly Gln Gly Gln Leu Val Thr Cys Ser Gly Ala Phe Lys Glu
 370 375 380

y Ser Leu Arg Ile Ile Arg Asn Gly Ile Gly Ile His Glu His Ala
 385 390 395 400

r Ile Asp Leu Pro Gly Ile Lys Gly Leu Trp Pro Leu Arg Ser Asp
 405 410 415

o Asn Arg Glu Thr Tyr Asp Thr Leu Val Leu Ser Phe Val Gly Gln
 420 425 430

r Arg Val Leu Met Leu Asn Gly Glu Glu Val Glu Glu Thr Glu Leu
 435 440 445

t Gly Phe Val Asp Asp Gln Gln Thr Phe Phe Cys Gly Asn Val Ala
 450 455 460

s Gln Gln Leu Ile Gln Ile Thr Ser Ala Ser Val Arg Leu Val Ser
 465 470 475 480

n Glu Pro Lys Ala Leu Val Ser Glu Trp Lys Glu Pro Gln Ala Lys
 485 490 495

n Ile Ser Val Ala Ser Cys Asn Ser Ser Gln Val Val Val Ala Val
 500 505 510

y Arg Ala Leu Tyr Tyr Leu Gln Ile His Pro Gln Glu Leu Arg Gln
 515 520 525

e Ser His Thr Glu Met Glu His Glu Val Ala Cys Leu Asp Ile Thr
 530 535 540

eolf-seql-S000001.txt

```

ro Leu Gly Asp Ser Asn Gly Leu Ser Pro Leu Cys Ala Ile Gly Leu
45          550          555          560

rp Thr Asp Ile Ser Ala Arg Ile Leu Lys Leu Pro Ser Phe Glu Leu
          565          570          575

eu His Lys Glu Met Leu Gly Gly Glu Ile Ile Pro Arg Ser Ile Leu
          580          585          590

et Thr Thr Phe Glu Ser Ser His Tyr Leu Leu Cys Ala Leu Gly Asp
          595          600          605

ly Ala Leu Phe Tyr Phe Gly Leu Asn Ile Glu Thr Gly Leu Leu Ser
610          615          620

sp Arg Lys Lys Val Thr Leu Gly Thr Gln Pro Thr Val Leu Arg Thr
25          630          635          640

ne Arg Ser Leu Ser Thr Thr Asn Val Phe Ala Cys Ser Asp Arg Pro
          645          650          655

ir Val Ile Tyr Ser Ser Asn His Lys Leu Val Phe Ser Asn Val Asn
          660          665          670

eu Lys Glu Val Asn Tyr Met Cys Pro Leu Asn Ser Asp Gly Tyr Pro
          675          680          685

sp Ser Leu Ala Leu Ala Asn Asn Ser Thr Leu Thr Ile Gly Thr Ile
690          695          700

p Glu Ile Gln Lys Leu His Ile Arg Thr Val Pro Leu Tyr Glu Ser
45          710          715          720

o Arg Lys Ile Cys Tyr Gln Glu Val Ser Gln Cys Phe Gly Val Leu
          725          730          735

r Ser Arg Ile Glu Val Gln Asp Thr Ser Gly Gly Thr Thr Ala Leu
          740          745          750

g Pro Ser Ala Ser Thr Gln Ala Leu Ser Ser Ser Val Ser Ser Ser
755          760          765

```

eolf-seql-S000001.txt

```

ys Leu Phe Ser Ser Ser Thr Ala Pro His Glu Thr Ser Phe Gly Glu
 770                               775                               780

lu Val Glu Val His Asn Leu Leu Ile Ile Asp Gln His Thr Phe Glu
35                               790                               795                               800

al Leu His Ala His Gln Phe Leu Gln Asn Glu Tyr Ala Leu Ser Leu
                               805                               810                               815

al Ser Cys Lys Leu Gly Lys Asp Pro Asn Thr Tyr Phe Ile Val Gly
                               820                               825                               830

ir Ala Met Val Tyr Pro Glu Glu Ala Glu Pro Lys Gln Gly Arg Ile
 835                               840                               845

al Val Phe Gln Tyr Ser Asp Gly Lys Leu Gln Thr Val Ala Glu Lys
 850                               855                               860

lu Val Lys Gly Ala Val Tyr Ser Met Val Glu Phe Asn Gly Lys Leu
55                               870                               875                               880

eu Ala Ser Ile Asn Ser Thr Val Arg Leu Tyr Glu Trp Thr Thr Glu
                               885                               890                               895

's Asp Val Arg Thr Glu Cys Asn His Tyr Asn Asn Ile Met Ala Leu
                               900                               905                               910

'r Leu Lys Thr Lys Gly Asp Phe Ile Leu Val Gly Asp Leu Met Arg
 915                               920                               925

'r Val Leu Leu Leu Ala Tyr Lys Pro Met Glu Gly Asn Phe Glu Glu
 930                               935                               940

e Ala Arg Asp Phe Asn Pro Asn Trp Met Ser Ala Val Glu Ile Leu
5                               950                               955                               960

p Asp Asp Asn Phe Leu Gly Ala Glu Asn Ala Phe Asn Leu Phe Val
                               965                               970                               975

s Gln Lys Asp Ser Ala Ala Thr Thr Asp Glu Glu Arg Gln His Leu

```

eolf-seql-S000001.txt

980

985

990

ln Glu Val Gly Leu Phe His Leu Gly Glu Phe Val Asn Val Phe Cys
 995 1000 1005

is Gly Ser Leu Val Met Gln Asn Leu Gly Glu Thr Ser Thr Pro
 1010 1015 1020

ar Gln Gly Ser Val Leu Phe Gly Thr Val Asn Gly Met Ile Gly
 1025 1030 1035

eu Val Thr Ser Leu Ser Glu Ser Trp Tyr Asn Leu Leu Leu Asp
 1040 1045 1050

et Gln Asn Arg Leu Asn Lys Val Ile Lys Ser Val Gly Lys Ile
 1055 1060 1065

lu His Ser Phe Trp Arg Ser Phe His Thr Glu Arg Lys Thr Glu
 1070 1075 1080

co Ala Thr Gly Phe Ile Asp Gly Asp Leu Ile Glu Ser Phe Leu
 1085 1090 1095

sp Ile Ser Arg Pro Lys Met Gln Glu Val Val Ala Asn Leu Gln
 1100 1105 1110

rr Asp Asp Gly Ser Gly Met Lys Arg Glu Ala Thr Ala Asp Asp
 1115 1120 1125

eu Ile Lys Val Val Glu Glu Leu Thr Arg Ile His
 1130 1135 1140

10> 165

11> 153

12> PRT

13> Homo sapiens

00> 165

et Gly Ala Pro Leu Leu Ser Pro Gly Trp Gly Ala Gly Ala Ala Gly
 5 10 15

g Arg Trp Trp Met Leu Leu Ala Pro Leu Leu Pro Ala Leu Leu Leu

eolf-seql-S000001.txt

20

25

30

al Arg Pro Ala Gly Ala Leu Val Glu Gly Leu Tyr Cys Gly Thr Arg
35 40 45

sp Cys Tyr Glu Val Leu Gly Val Ser Arg Ser Ala Gly Lys Ala Glu
50 55 60

le Ala Arg Ala Tyr Arg Gln Leu Ala Arg Arg Tyr His Pro Asp Arg
70 75 80

rr Arg Pro Gln Pro Gly Asp Glu Gly Pro Gly Arg Thr Pro Gln Ser
85 90 95

la Glu Glu Ala Phe Leu Leu Val Ala Thr Ala Tyr Glu Thr Leu Lys
100 105 110

al Ser Gln Ala Ala Ala Glu Leu Gln Gln Tyr Cys Met Gln Asn Ala
115 120 125

rs Lys Asp Ala Leu Leu Val Gly Val Pro Ala Gly Ser Asn Pro Phe
130 135 140

g Glu Pro Arg Ser Cys Ala Leu Leu
5 150

10> 166

11> 557

12> PRT

13> Homo sapiens

00> 166

t Asp Gly Ile Val Pro Asp Ile Ala Val Gly Thr Lys Arg Gly Ser
5 10 15

p Glu Leu Phe Ser Thr Cys Val Thr Asn Gly Pro Phe Ile Met Ser
20 25 30

r Asn Ser Ala Ser Ala Ala Asn Gly Asn Asp Ser Lys Lys Phe Lys
35 40 45

y Asp Ser Arg Ser Ala Gly Val Pro Ser Arg Val Ile His Ile Arg

eolf-seql-S000001.txt

```

50                                     55                                     60

ys Leu Pro Ile Asp Val Thr Glu Gly Glu Val Ile Ser Leu Gly Leu
5                                     70                                     75                                     80

ro Phe Gly Lys Val Thr Asn Leu Leu Met Leu Lys Gly Lys Asn Gln
85                                     90                                     95

la Phe Ile Glu Met Asn Thr Glu Glu Ala Ala Asn Thr Met Val Asn
100                                     105                                     110

yr Tyr Thr Ser Val Thr Pro Val Leu Arg Gly Gln Pro Ile Tyr Ile
115                                     120                                     125

ln Phe Ser Asn His Lys Glu Leu Lys Thr Asp Ser Ser Pro Asn Gln
130                                     135                                     140

la Arg Ala Gln Ala Ala Leu Gln Ala Val Asn Ser Val Gln Ser Gly
145                                     150                                     155                                     160

sn Leu Ala Leu Ala Ala Ser Ala Ala Ala Val Asp Ala Gly Met Ala
165                                     170                                     175

et Ala Gly Gln Ser Pro Val Leu Arg Ile Ile Val Glu Asn Leu Phe
180                                     185                                     190

r Pro Val Thr Leu Asp Val Leu His Gln Ile Phe Ser Lys Phe Gly
195                                     200                                     205

r Val Leu Lys Ile Ile Thr Phe Thr Lys Asn Asn Gln Phe Gln Ala
210                                     215                                     220

u Leu Gln Tyr Ala Asp Pro Val Ser Ala Gln His Ala Lys Leu Ser
225                                     230                                     235                                     240

u Asp Gly Gln Asn Ile Tyr Asn Ala Cys Cys Thr Leu Arg Ile Asp
245                                     250                                     255

e Ser Lys Leu Thr Ser Leu Asn Val Lys Tyr Asn Asn Asp Lys Ser
260                                     265                                     270

```


eolf-seq1-S000001.txt

```

rg Asp Tyr Thr Arg Pro Asp Leu Pro Ser Gly Asp Ser Gln Pro Ser
  275                               280                               285

eu Asp Gln Thr Met Ala Ala Ala Phe Gly Ala Pro Gly Ile Ile Ser
  290                               295                               300

.a Ser Pro Tyr Ala Gly Ala Gly Phe Pro Pro Thr Phe Ala Ile Pro
  305                               310                               315                               320

.n Ala Ala Gly Leu Ser Val Pro Asn Val His Gly Ala Leu Ala Pro
  325                               330                               335

eu Ala Ile Pro Ser Ala Ala Ala Ala Ala Ala Ala Gly Arg Ile
  340                               345                               350

.a Ile Pro Gly Leu Ala Gly Ala Gly Asn Ser Val Leu Leu Val Ser
  355                               360                               365

.n Leu Asn Pro Glu Arg Val Thr Pro Gln Ser Leu Phe Ile Leu Phe
  370                               375                               380

y Val Tyr Gly Asp Val Gln Arg Val Lys Ile Leu Phe Asn Lys Lys
  385                               390                               395                               400

u Asn Ala Leu Val Gln Met Ala Asp Gly Asn Gln Ala Gln Leu Ala
  405                               410                               415

t Ser His Leu Asn Gly His Lys Leu His Gly Lys Pro Ile Arg Ile
  420                               425                               430

r Leu Ser Lys His Gln Asn Val Gln Leu Pro Arg Glu Gly Gln Glu
  435                               440                               445

p Gln Gly Leu Thr Lys Asp Tyr Gly Asn Ser Pro Leu His Arg Phe
  450                               455                               460

s Lys Pro Gly Ser Lys Asn Phe Gln Asn Ile Phe Pro Pro Ser Ala
  465                               470                               475                               480

r Leu His Leu Ser Asn Ile Pro Pro Ser Val Ser Glu Glu Asp Leu
  485                               490                               495

```

eolf-seql-S000001.txt

```

/s Val Leu Phe Ser Ser Asn Gly Gly Val Val Lys Gly Phe Lys Phe
    500                                505                                510

e Gln Lys Asp Arg Lys Met Ala Leu Ile Gln Met Gly Ser Val Glu
    515                                520                                525

u Ala Val Gln Ala Leu Ile Asp Leu His Asn His Asp Leu Gly Glu
    530                                535                                540

n His His Leu Arg Val Ser Phe Ser Lys Ser Thr Ile
  15                                550                                555

:10> 167
:11> 303
:12> PRT
:13> Homo sapiens

:00> 167

t Ala Arg Gly Lys Ala Lys Glu Glu Gly Ser Trp Lys Lys Phe Ile
    5                                10                                15

p Asn Ser Glu Lys Lys Glu Phe Leu Gly Arg Thr Gly Gly Ser Trp
    20                                25                                30

e Lys Ile Leu Leu Phe Tyr Val Ile Phe Tyr Gly Cys Leu Ala Gly
    35                                40                                45

e Phe Ile Gly Thr Ile Gln Val Met Leu Leu Thr Ile Ser Glu Phe
    50                                55                                60

s Pro Thr Tyr Gln Asp Arg Val Ala Pro Pro Gly Leu Thr Gln Ile
    70                                75                                80

o Gln Ile Gln Lys Thr Glu Ile Ser Phe Arg Pro Asn Asp Pro Lys
    85                                90                                95

r Tyr Glu Ala Tyr Val Leu Asn Ile Val Arg Phe Leu Glu Lys Tyr
    100                               105                               110

s Asp Ser Ala Gln Arg Asp Asp Met Ile Phe Glu Asp Cys Gly Asp
    115                               120                               125

```

eolf-seql-S000001.txt

al Pro Ser Glu Pro Lys Glu Arg Gly Asp Phe Asn His Glu Arg Gly
130 135 140

lu Arg Lys Val Cys Arg Phe Lys Leu Glu Trp Leu Gly Asn Cys Ser
15 150 155 160

y Leu Asn Asp Glu Thr Tyr Gly Tyr Lys Glu Gly Lys Pro Cys Ile
165 170 175

e Ile Lys Leu Asn Arg Val Leu Gly Phe Lys Pro Lys Pro Pro Lys
180 185 190

sn Glu Ser Leu Glu Thr Tyr Pro Val Met Lys Tyr Asn Pro Asn Val
195 200 205

u Pro Val Gln Cys Thr Gly Lys Arg Asp Glu Asp Lys Asp Lys Val
210 215 220

y Asn Val Glu Tyr Phe Gly Leu Gly Asn Ser Pro Gly Phe Pro Leu
230 235 240

n Tyr Tyr Pro Tyr Tyr Gly Lys Leu Leu Gln Pro Lys Tyr Leu Gln
245 250 255

o Leu Leu Ala Val Gln Phe Thr Asn Leu Thr Met Asp Thr Glu Ile
260 265 270

g Ile Glu Cys Lys Ala Tyr Gly Glu Asn Ile Gly Tyr Ser Glu Lys
275 280 285

p Arg Phe Gln Gly Arg Phe Asp Val Lys Ile Glu Val Lys Ser
290 295 300

10> 168

11> 361

12> PRT

13> Homo sapiens

00> 168

t Phe Ser Ser Val Ala His Leu Ala Arg Ala Asn Pro Phe Asn Thr
5 10 15

eolf-seql-S000001.txt

```

ro His Leu Gln Leu Val His Asp Gly Leu Gly Asp Leu Arg Ser Ser
    20                      25                      30

er Pro Gly Pro Thr Gly Gln Pro Arg Arg Pro Arg Asn Leu Ala Ala
    35                      40                      45

la Ala Val Glu Glu Tyr Ser Cys Glu Phe Gly Ser Ala Lys Tyr Tyr
    50                      55                      60

la Leu Cys Gly Phe Gly Gly Val Leu Ser Cys Gly Leu Thr His Thr
    70                      75                      80

la Val Val Pro Leu Asp Leu Val Lys Cys Arg Met Gln Val Asp Pro
    85                      90                      95

n Lys Tyr Lys Gly Ile Phe Asn Gly Phe Ser Val Thr Leu Lys Glu
   100                      105                      110

p Gly Val Arg Gly Leu Ala Lys Gly Trp Ala Pro Thr Phe Leu Gly
   115                      120                      125

r Ser Met Gln Gly Leu Cys Lys Phe Gly Phe Tyr Glu Val Phe Lys
   130                      135                      140

l Leu Tyr Ser Asn Met Leu Gly Glu Glu Asn Thr Tyr Leu Trp Arg
   150                      155                      160

r Ser Leu Tyr Leu Ala Ala Ser Ala Ser Ala Glu Phe Phe Ala Asp
   165                      170                      175

e Ala Leu Ala Pro Met Glu Ala Ala Lys Val Arg Ile Gln Thr Gln
   180                      185                      190

o Gly Tyr Ala Asn Thr Leu Arg Asp Ala Ala Pro Lys Met Tyr Lys
   195                      200                      205

u Glu Gly Leu Lys Ala Phe Tyr Lys Gly Val Ala Pro Leu Trp Met
   210                      215                      220

g Gln Ile Pro Tyr Thr Met Met Lys Phe Ala Cys Phe Glu Arg Thr
   230                      235                      240

```

eolf-seql-S000001.txt

al Glu Ala Leu Tyr Lys Phe Val Val Pro Lys Pro Arg Ser Glu Cys
245 250 255

er Lys Pro Glu Gln Leu Val Val Thr Phe Val Ala Gly Tyr Ile Ala
260 265 270

y Val Phe Cys Ala Ile Val Ser His Pro Ala Asp Ser Val Val Ser
275 280 285

al Leu Asn Lys Glu Lys Gly Ser Ser Ala Ser Leu Val Leu Lys Arg
290 295 300

u Gly Phe Lys Gly Val Trp Lys Gly Leu Phe Ala Arg Ile Ile Met
305 310 315 320

e Gly Thr Leu Thr Ala Leu Gln Trp Phe Ile Tyr Asp Ser Val Lys
325 330 335

al Tyr Phe Arg Leu Pro Arg Pro Pro Pro Pro Glu Met Pro Glu Ser
340 345 350

u Lys Lys Lys Leu Gly Leu Thr Gln
355 360

10> 169
11> 369
12> PRT
13> Homo sapiens

00> 169

t Asp Pro Arg Lys Val Asn Glu Leu Arg Ala Phe Val Lys Met Cys
5 10 15

s Gln Asp Pro Ser Val Leu His Thr Glu Glu Met Arg Phe Leu Arg
20 25 30

u Trp Val Glu Ser Met Gly Gly Lys Val Pro Pro Ala Thr Gln Lys
35 40 45

a Lys Ser Glu Glu Asn Thr Lys Glu Glu Lys Pro Asp Ser Lys Lys
50 55 60

eolf-seql-S000001.txt

```

1  Glu Glu Asp Leu Lys Ala Asp Glu Pro Ser Ser Glu Glu Ser Asp
;           70                      75                      80

2  Glu Ile Asp Lys Glu Gly Val Ile Glu Pro Asp Thr Asp Ala Pro
           85                      90                      95

3  Glu Met Gly Asp Glu Asn Ala Glu Ile Thr Glu Glu Met Met Asp
           100                    105                    110

4  Ala Asn Asp Lys Lys Val Ala Ala Ile Glu Ala Leu Asn Asp Gly
           115                    120                    125

5  Leu Gln Lys Ala Ile Asp Leu Phe Thr Asp Ala Ile Lys Leu Asn
           130                    135                    140

6  Arg Leu Ala Ile Leu Tyr Ala Lys Arg Ala Ser Val Phe Val Lys
5           150                    155                    160

7  Gln Lys Pro Asn Ala Ala Ile Arg Asp Cys Asp Arg Ala Ile Glu
           165                    170                    175

8  Asn Pro Asp Ser Ala Gln Pro Tyr Lys Trp Arg Gly Lys Ala His
           180                    185                    190

9  Leu Leu Gly His Trp Glu Glu Ala Ala His Asp Leu Ala Leu Ala
           195                    200                    205

10 Lys Leu Asp Tyr Asp Glu Asp Ala Ser Ala Met Leu Lys Glu Val
           210                    215                    220

11 Pro Arg Ala Gln Lys Ile Ala Glu His Arg Arg Lys Tyr Glu Arg
5           230                    235                    240

12 Arg Glu Glu Arg Glu Ile Lys Glu Arg Ile Glu Arg Val Lys Lys
           245                    250                    255

13 Arg Glu Glu His Glu Arg Ala Gln Arg Glu Glu Glu Ala Arg Arg
           260                    265                    270

14 Ser Gly Ala Gln Tyr Gly Ser Phe Pro Gly Gly Phe Pro Gly Gly

```

eolf-seql-S000001.txt

275

280

285

et Pro Gly Asn Phe Pro Gly Gly Met Pro Gly Met Gly Gly Gly Met
 290 295 300

ro Gly Met Ala Gly Met Pro Gly Leu Asn Glu Ile Leu Ser Asp Pro
 305 310 315 320

lu Val Leu Ala Ala Met Gln Asp Pro Glu Val Met Val Ala Phe Gln
 325 330 335

sp Val Ala Gln Asn Pro Ala Asn Met Ser Lys Tyr Gln Ser Asn Pro
 340 345 350

ys Val Met Asn Leu Ile Ser Lys Leu Ser Ala Lys Phe Gly Gly Gln
 355 360 365

.a

:10> 170
 :11> 440
 :12> PRT
 :13> Homo sapiens

:20>
 :21> misc_feature
 :22> (21)..(21)
 :23> Xaa can be any naturally occurring amino acid

:00> 170

et Glu Tyr Gln Ile Leu Lys Met Ser Leu Cys Leu Phe Ile Leu Leu
 5 10 15

e Leu Thr Pro Xaa Ile Leu Cys Ile Cys Pro Leu Gln Cys Ile Cys
 20 25 30

r Glu Arg His Arg His Val Asp Cys Ser Gly Arg Asn Leu Ser Thr
 35 40 45

u Pro Ser Gly Leu Gln Glu Asn Ile Ile His Leu Asn Leu Ser Tyr
 50 55 60

eolf-seql-S000001.txt

```

5  n His Phe Thr Asp Leu His Asn Gln Leu Thr Gln Tyr Thr Asn Leu
    70                               75                               80

    g Thr Leu Asp Ile Ser Asn Asn Arg Leu Glu Ser Leu Pro Ala His
        85                               90                               95

    u Pro Arg Ser Leu Trp Asn Met Ser Ala Ala Asn Asn Asn Ile Lys
        100                               105                               110

    u Leu Asp Lys Ser Asp Thr Ala Tyr Gln Trp Asn Leu Lys Tyr Leu
        115                               120                               125

    p Val Ser Lys Asn Met Leu Glu Lys Val Val Leu Ile Lys Asn Thr
        130                               135                               140

    u Arg Ser Leu Glu Val Leu Asn Leu Ser Ser Asn Lys Leu Trp Thr
    15                               150                               155                               160

    l Pro Thr Asn Met Pro Ser Lys Leu His Ile Val Asp Leu Ser Asn
        165                               170                               175

    n Ser Leu Thr Gln Ile Leu Pro Gly Thr Leu Ile Asn Leu Thr Asn
        180                               185                               190

    u Thr His Leu Tyr Leu His Asn Asn Lys Phe Thr Phe Ile Pro Asp
        195                               200                               205

    n Ser Phe Asp Gln Leu Phe Gln Leu Gln Glu Ile Thr Leu Tyr Asn
        210                               215                               220

    n Arg Trp Ser Cys Asp His Lys Gln Asn Ile Thr Tyr Leu Leu Lys
    5                               230                               235                               240

    p Met Met Glu Thr Lys Ala His Val Ile Gly Thr Pro Cys Ser Thr
        245                               250                               255

    n Ile Ser Ser Leu Lys Glu His Asn Met Tyr Pro Thr Pro Ser Gly
        260                               265                               270

    e Thr Ser Ser Leu Phe Thr Val Ser Gly Met Gln Thr Val Asp Thr
        275                               280                               285

```


eolf-seql-S000001.txt

le Asn Ser Leu Ser Val Val Thr Gln Pro Lys Val Thr Lys Ile Pro
 290 295 300

/s Gln Tyr Arg Thr Lys Glu Thr Thr Phe Gly Ala Thr Leu Ser Lys
 305 310 315 320

sp Thr Thr Phe Thr Ser Thr Asp Lys Ala Phe Val Pro Tyr Pro Glu
 325 330 335

sp Thr Ser Thr Glu Thr Ile Asn Ser His Glu Ala Ala Ala Ala Thr
 340 345 350

eu Thr Ile His Leu Gln Asp Gly Met Val Thr Asn Thr Ser Leu Thr
 355 360 365

er Ser Thr Lys Ser Ser Pro Thr Pro Met Thr Leu Ser Ile Thr Ser
 370 375 380

y Met Pro Asn Asn Phe Ser Glu Met Pro Gln Gln Ser Thr Thr Leu
 385 390 395 400

on Leu Trp Arg Glu Glu Thr Thr Thr Asn Val Lys Thr Pro Leu Pro
 405 410 415

er Val Ala Asn Ala Trp Lys Val Asn Ala Ser Phe Leu Leu Leu Leu
 420 425 430

n Val Val Val Met Leu Ala Val
 435 440

10> 171
 11> 241
 12> PRT
 13> Homo sapiens

00> 171

t Leu Ser Ser Thr Ala Met Tyr Ser Ala Pro Gly Arg Asp Leu Gly
 5 10 15

t Glu Pro His Arg Ala Ala Gly Pro Leu Gln Leu Arg Phe Ser Pro
 20 25 30

eolf-seql-S000001.txt

```

/r Val Phe Asn Gly Gly Thr Ile Leu Ala Ile Ala Gly Glu Asp Phe
   35                               40                               45

la Ile Val Ala Ser Asp Thr Arg Leu Ser Glu Gly Phe Ser Ile His
   50                               55                               60

/r Arg Asp Ser Pro Lys Cys Tyr Lys Leu Thr Asp Lys Thr Val Ile
;                               70                               75                               80

.y Cys Ser Gly Phe His Gly Asp Cys Leu Thr Leu Thr Lys Ile Ile
   85                               90                               95

.u Ala Arg Leu Lys Met Tyr Lys His Ser Asn Asn Lys Ala Met Thr
   100                              105                              110

/r Gly Ala Ile Ala Ala Met Leu Ser Thr Ile Leu Tyr Ser Arg Arg
   115                              120                              125

.e Phe Pro Tyr Tyr Val Tyr Asn Ile Ile Gly Gly Leu Asp Glu Glu
   130                              135                              140

.y Lys Gly Ala Val Tyr Ser Phe Asp Pro Val Gly Ser Tyr Gln Arg
5                               150                              155                              160

p Ser Phe Lys Ala Gly Gly Ser Ala Ser Ala Met Leu Gln Pro Leu
   165                              170                              175

u Asp Asn Gln Val Gly Phe Lys Asn Met Gln Asn Val Glu His Val
   180                              185                              190

o Leu Ser Leu Asp Arg Ala Met Arg Leu Val Lys Asp Val Phe Ile
   195                              200                              205

r Ala Ala Glu Arg Asp Val Tyr Thr Gly Asp Ala Leu Arg Ile Cys
   210                              215                              220

e Val Thr Lys Glu Gly Ile Arg Glu Glu Thr Val Ser Leu Arg Lys
5                               230                              235                              240

```

p

eolf-seql-S000001.txt

:10> 172
 :11> 83
 :12> PRT
 :13> Homo sapiens

:00> 172

t Gln Asn Asp Ala Gly Glu Phe Val Asp Leu Tyr Val Pro Arg Lys
 5 10 15

s Ser Ala Ser Asn Arg Ile Ile Gly Ala Lys Asp His Ala Ser Ile
 20 25 30

n Met Asn Val Ala Glu Val Asp Lys Val Thr Gly Arg Phe Asn Gly
 35 40 45

n Phe Lys Thr Tyr Ala Ile Cys Gly Ala Ile Arg Arg Met Gly Glu
 50 55 60

r Asp Asp Ser Ile Leu Arg Leu Ala Lys Ala Asp Gly Ile Val Ser
 70 75 80

s Asn Phe

10> 173
 11> 660
 12> PRT
 13> Homo sapiens

:00> 173

t Glu Ala Leu Met Ala Arg Gly Ala Leu Thr Gly Pro Leu Arg Ala
 5 10 15

u Cys Leu Leu Gly Cys Leu Leu Ser His Ala Ala Ala Pro Ser
 20 25 30

o Ile Ile Lys Phe Pro Gly Asp Val Ala Pro Lys Thr Asp Lys Glu
 35 40 45

u Ala Val Gln Tyr Leu Asn Thr Phe Tyr Gly Cys Pro Lys Glu Ser
 50 55 60

eolf-seql-S000001.txt

```

ys Asn Leu Phe Val Leu Lys Asp Thr Leu Lys Lys Met Gln Lys Phe
5          70          75          80

ne Gly Leu Pro Gln Thr Gly Asp Leu Asp Gln Asn Thr Ile Glu Thr
          85          90          95

et Arg Lys Pro Arg Cys Gly Asn Pro Asp Val Ala Asn Tyr Asn Phe
          100          105          110

ne Pro Arg Lys Pro Lys Trp Asp Lys Asn Gln Ile Thr Tyr Arg Ile
          115          120          125

e Gly Tyr Thr Pro Asp Leu Asp Pro Glu Thr Val Asp Asp Ala Phe
130          135          140

a Arg Ala Phe Gln Val Trp Ser Asp Val Thr Pro Leu Arg Phe Ser
15          150          155          160

g Ile His Asp Gly Glu Ala Asp Ile Met Ile Asn Phe Gly Arg Trp
          165          170          175

u His Gly Asp Gly Tyr Pro Phe Asp Gly Lys Asp Gly Leu Leu Ala
          180          185          190

s Ala Phe Ala Pro Gly Thr Gly Val Gly Gly Asp Ser His Phe Asp
          195          200          205

p Asp Glu Leu Trp Thr Leu Gly Glu Gly Gln Val Val Arg Val Lys
210          215          220

r Gly Asn Ala Asp Gly Glu Tyr Cys Lys Phe Pro Phe Leu Phe Asn
5          230          235          240

y Lys Glu Tyr Asn Ser Cys Thr Asp Thr Gly Arg Ser Asp Gly Phe
          245          250          255

u Trp Cys Ser Thr Thr Tyr Asn Phe Glu Lys Asp Gly Lys Tyr Gly
          260          265          270

e Cys Pro His Glu Ala Leu Phe Thr Met Gly Gly Asn Ala Glu Gly

```

eolf-seql-S000001.txt

275

280

285

```

ln Pro Cys Lys Phe Pro Phe Arg Phe Gln Gly Thr Ser Tyr Asp Ser
 290          295          300

ys Thr Thr Glu Gly Arg Thr Asp Gly Tyr Arg Trp Cys Gly Thr Thr
 305          310          315          320

u Asp Tyr Asp Arg Asp Lys Lys Tyr Gly Phe Cys Pro Glu Thr Ala
 325          330          335

t Ser Thr Val Gly Gly Asn Ser Glu Gly Ala Pro Cys Val Phe Pro
 340          345          350

e Thr Phe Leu Gly Asn Lys Tyr Glu Ser Cys Thr Ser Ala Gly Arg
 355          360          365

r Asp Gly Lys Met Trp Cys Ala Thr Thr Ala Asn Tyr Asp Asp Asp
 370          375          380

g Lys Trp Gly Phe Cys Pro Asp Gln Gly Tyr Ser Leu Phe Leu Val
 385          390          395          400

a Ala His Glu Phe Gly His Ala Met Gly Leu Glu His Ser Gln Asp
 405          410          415

o Gly Ala Leu Met Ala Pro Ile Tyr Thr Tyr Thr Lys Asn Phe Arg
 420          425          430

u Ser Gln Asp Asp Ile Lys Gly Ile Gln Glu Leu Tyr Gly Ala Ser
 435          440          445

o Asp Ile Asp Leu Gly Thr Gly Pro Thr Pro Thr Leu Gly Pro Val
 450          455          460

r Pro Glu Ile Cys Lys Gln Asp Ile Val Phe Asp Gly Ile Ala Gln
 465          470          475          480

e Arg Gly Glu Ile Phe Phe Phe Lys Asp Arg Phe Ile Trp Arg Thr
 485          490          495

```

eolf-seql-S000001.txt

al Thr Pro Arg Asp Lys Pro Met Gly Pro Leu Leu Val Ala Thr Phe
 500 505 510

tp Pro Glu Leu Pro Glu Lys Ile Asp Ala Val Tyr Glu Ala Pro Gln
 515 520 525

u Glu Lys Ala Val Phe Phe Ala Gly Asn Glu Tyr Trp Ile Tyr Ser
 530 535 540

a Ser Thr Leu Glu Arg Gly Tyr Pro Lys Pro Leu Thr Ser Leu Gly
 5 550 555 560

u Pro Pro Asp Val Gln Arg Val Asp Ala Ala Phe Asn Trp Ser Lys
 565 570 575

n Lys Lys Thr Tyr Ile Phe Ala Gly Asp Lys Phe Trp Arg Tyr Asn
 580 585 590

u Val Lys Lys Lys Met Asp Pro Gly Phe Pro Lys Leu Ile Ala Asp
 595 600 605

a Trp Asn Ala Ile Pro Asp Asn Leu Asp Ala Val Val Asp Leu Gln
 610 615 620

y Gly Gly His Ser Tyr Phe Phe Lys Gly Ala Tyr Tyr Leu Lys Leu
 5 630 635 640

u Asn Gln Ser Leu Lys Ser Val Lys Phe Gly Ser Ile Lys Ser Asp
 645 650 655

p Leu Gly Cys
 660

10> 174
 11> 245
 12> PRT
 13> Homo sapiens

00> 174

t Asp Lys Asn Glu Leu Val Gln Lys Ala Lys Leu Ala Glu Gln Ala
 5 10 15

eolf-seq1-S000001.txt

u Arg Tyr Asp Asp Met Ala Ala Cys Met Lys Ser Val Thr Glu Gln
 20 25 30

y Ala Glu Leu Ser Asn Glu Glu Arg Asn Leu Leu Ser Val Ala Tyr
 35 40 45

s Asn Val Val Gly Ala Arg Arg Ser Ser Trp Arg Val Val Ser Ser
 50 55 60

e Glu Gln Lys Thr Glu Gly Ala Glu Lys Lys Gln Gln Met Ala Arg
 70 75 80

u Tyr Arg Glu Lys Ile Glu Thr Glu Leu Arg Asp Ile Cys Asn Asp
 85 90 95

l Leu Ser Leu Leu Glu Lys Phe Leu Ile Pro Asn Ala Ser Gln Ala
 100 105 110

u Ser Lys Val Phe Tyr Leu Lys Met Lys Gly Asp Tyr Tyr Arg Tyr
 115 120 125

u Ala Glu Val Ala Ala Gly Asp Asp Lys Lys Gly Ile Val Asp Gln
 130 135 140

r Gln Gln Ala Tyr Gln Glu Ala Phe Glu Ile Ser Lys Lys Glu Met
 150 155 160

n Pro Thr His Pro Ile Arg Leu Gly Leu Ala Leu Asn Phe Ser Val
 165 170 175

e Tyr Tyr Glu Ile Leu Asn Ser Pro Glu Lys Ala Cys Ser Leu Ala
 180 185 190

s Thr Ala Phe Asp Glu Ala Ile Ala Glu Leu Asp Thr Leu Ser Glu
 195 200 205

u Ser Tyr Lys Asp Ser Thr Leu Ile Met Gln Leu Leu Arg Asp Asn
 210 215 220

u Thr Leu Trp Thr Ser Asp Thr Gln Gly Asp Glu Ala Glu Ala Gly
 230 235 240

eolf-seql-S000001.txt

u Gly Gly Glu Asn
245

10> 175

11> 173

12> PRT

13> Homo sapiens

100> 175

t Ser Thr Met Gly Asn Glu Ala Ser Tyr Pro Ala Glu Met Cys Ser
5 10 15

s Phe Asp Asn Asp Glu Ile Lys Arg Leu Gly Arg Arg Phe Lys Lys
20 25 30

u Asp Leu Asp Lys Ser Gly Ser Leu Ser Val Glu Glu Phe Met Ser
35 40 45

u Pro Glu Leu Arg His Asn Pro Leu Val Arg Arg Val Ile Asp Val
50 55 60

e Asp Thr Asp Gly Asp Gly Glu Val Asp Phe Lys Glu Phe Ile Leu
70 75 80

y Thr Ser Gln Phe Ser Val Lys Gly Asp Glu Glu Gln Lys Leu Arg
85 90 95

e Ala Phe Ser Ile Tyr Asp Met Asp Lys Asp Gly Tyr Ile Ser Asn
100 105 110

y Glu Leu Phe Gln Val Leu Lys Met Met Val Gly Asn Asn Leu Thr
115 120 125

p Trp Gln Leu Gln Gln Leu Val Asp Lys Thr Ile Ile Ile Leu Asp
130 135 140

s Asp Gly Asp Gly Lys Ile Ser Phe Glu Glu Phe Ser Ala Val Val
5 150 155 160

g Asp Leu Glu Ile His Lys Lys Leu Val Leu Ile Val
165 170

eolf-seql-S000001.txt

```

110> 176
111> 907
112> PRT
113> Homo sapiens

100> 176

t Thr Ala Val His Ala Gly Asn Ile Asn Phe Lys Trp Asp Pro Lys
   5                      10                      15

r Leu Glu Ile Arg Thr Leu Ala Val Glu Arg Leu Leu Glu Pro Leu
   20                      25                      30

l Thr Gln Val Thr Thr Leu Val Asn Thr Asn Ser Lys Gly Pro Ser
   35                      40                      45

n Lys Lys Arg Gly Arg Ser Lys Lys Ala His Val Leu Ala Ala Ser
   50                      55                      60

l Glu Gln Ala Thr Glu Asn Phe Leu Glu Lys Gly Asp Lys Ile Ala
   70                      75                      80

s Glu Ser Gln Phe Leu Lys Glu Glu Leu Val Val Ala Val Glu Asp
   85                      90                      95

l Arg Lys Gln Gly Asp Leu Met Lys Ala Ala Ala Gly Glu Phe Ala
  100                      105                      110

p Asp Pro Cys Ser Ser Val Lys Arg Gly Asn Met Val Arg Ala Ala
  115                      120                      125

g Ala Leu Leu Ser Ala Val Thr Arg Leu Leu Ile Leu Ala Asp Met
  130                      135                      140

a Asp Val Tyr Lys Leu Leu Val Gln Leu Lys Val Val Glu Asp Gly
  150                      155                      160

e Leu Lys Leu Arg Asn Ala Gly Asn Glu Gln Asp Leu Gly Asn Gln
  165                      170                      175

r Lys Ala Leu Lys Pro Glu Val Asp Lys Leu Asn Ile Met Ala Ala
  180                      185                      190

```

eolf-seql-S000001.txt

```

ys Arg Gln Gln Glu Leu Lys Asp Val Gly His Arg Asp Gln Met Ala
   195                               200                   205

la Ala Arg Gly Ile Leu Gln Ser Asn Val Pro Ile Leu Tyr Thr Ala
   210                               215                   220

er Gln Ala Cys Leu Gln His Pro Asp Val Ala Ala Tyr Lys Ala Asn
 25                               230                   235                   240

rg Asp Leu Ile Tyr Lys Gln Leu Gln Gln Ala Val Thr Gly Ile Ser
   245                               250                   255

sn Ala Ala Gln Ala Thr Ala Ser Asp Asp Ala Ser Gln His Gln Gly
   260                               265                   270

.y Gly Gly Gly Glu Leu Ala Tyr Ala Leu Asn Asn Phe Asp Lys Gln
   275                               280                   285

.e Ile Val Asp Pro Leu Ser Phe Ser Glu Glu Arg Phe Arg Pro Ser
   290                               295                   300

eu Glu Glu Arg Leu Glu Ser Ile Ile Ser Gly Ala Ala Leu Met Ala
 05                               310                   315                   320

sp Ser Ser Cys Thr Arg Asp Asp Arg Arg Glu Arg Ile Val Ala Glu
   325                               330                   335

's Asn Ala Val Arg Gln Ala Cys Arg Thr Cys Val Ser Glu Tyr Met
   340                               345                   350

.y Asn Ala Gly Arg Lys Glu Arg Ser Asp Ala Leu Asn Ser Ala Ile
   355                               360                   365

p Lys Met Thr Lys Lys Thr Arg Asp Leu Arg Arg Gln Leu Arg Lys
   370                               375                   380

a Val Met Asp His Val Ser Asp Ser Phe Leu Glu Thr Asn Val Pro
 5                               390                   395                   400

u Leu Val Leu Ile Glu Ala Ala Lys Asn Gly Asn Glu Lys Glu Val
   405                               410                   415

```

eolf-seql-S000001.txt

ys Glu Tyr Ala Gln Val Phe Arg Glu His Ala Asn Lys Leu Ile Glu
420 425 430

al Ala Asn Leu Ala Cys Ser Ile Ser Asn Asn Glu Glu Gly Val Lys
435 440 445

eu Val Arg Met Ser Ala Ser Gln Leu Glu Ala Gly Cys Pro Gln Val
450 455 460

le Asn Ala Ala Thr Trp Ala Leu Ala Pro Lys Pro Gln Ser Lys Leu
465 470 475 480

la Gln Glu Asn Met Asp Leu Phe Lys Glu Gln Trp Glu Lys Gln Val
485 490 495

rg Val Leu Thr Asp Ala Val Asp Asp Ile Thr Ser Ile Asp Asp Phe
500 505 510

eu Ala Val Ser Glu Asn His Ile Leu Glu Asp Val Asn Lys Cys Val
515 520 525

le Ala Leu Gln Glu Lys Asp Val Asp Gly Leu Asp Arg Thr Ala Gly
530 535 540

la Ile Arg Gly Arg Ala Ala Arg Val Ile His Val Val Thr Ser Glu
545 550 555 560

at Asp Asn Tyr Glu Pro Gly Val Tyr Thr Glu Lys Val Leu Glu Ala
565 570 575

er Lys Leu Leu Ser Asn Thr Val Met Pro Arg Phe Thr Glu Gln Val
580 585 590

u Ala Ala Val Glu Ala Leu Ser Ser Asp Pro Ala Gln Pro Met Asp
595 600 605

u Asn Glu Phe Ile Asp Ala Ser Arg Leu Val Tyr Asp Gly Ile Arg
610 615 620

p Ile Arg Lys Ala Val Leu Met Ile Arg Thr Pro Glu Glu Leu Asp

eolf-seql-S000001.txt

5 630 635 640

p Ser Asp Phe Glu Thr Glu Asp Phe Asp Val Arg Ser Glu Thr Ser
645 650 655

l Gln Thr Glu Asp Asp Gln Leu Ile Ala Gly Gln Ser Ala Arg Ala
660 665 670

e Met Ala Gln Leu Pro Gln Glu Gln Lys Ala Lys Ile Arg Glu Gln
675 680 685

l Ala Ser Phe Gln Glu Glu Lys Ser Lys Leu Asp Ala Glu Val Ser
690 695 700

s Trp Asp Asp Ser Gly Asn Asp Ile Ile Val Leu Ala Lys Gln Met
710 715 720

s Met Ile Met Met Glu Met Thr Asp Phe Thr Arg Gly Lys Gly Pro
725 730 735

u Lys Asn Thr Ser Asp Val Ile Ser Ala Ala Lys Lys Ile Ala Glu
740 745 750

a Gly Ser Arg Met Asp Lys Leu Gly Arg Thr Ile Arg Asp His Cys
755 760 765

o Asp Ser Ala Cys Lys Gln Asp Leu Leu Ala Tyr Leu Gln Arg Ile
770 775 780

a Leu Tyr Cys His Gln Leu Asn Ile Cys Ser Lys Val Lys Ala Glu
790 795 800

l Gln Asn Leu Gly Gly Glu Leu Val Val Ser Gly Val Asp Ser Ala
805 810 815

i Ser Leu Ile Gln Ala Ala Lys Asn Leu Met Asn Ala Val Val Gln
820 825 830

i Val Lys Ala Ser Tyr Val Ala Ser Thr Lys Tyr Gln Lys Ser Gln
835 840 845

eolf-seql-S000001.txt

ly Met Ala Ser Leu Asn Leu Pro Ala Val Ser Met Lys Met Lys Ala
 850 855 860

to Glu Lys Lys Pro Leu Val Lys Arg Glu Lys Gln Asp Glu Thr Gln
 55 870 875 880

ir Lys Ile Lys Arg Ala Ser Gln Lys Lys His Val Asn Pro Val Gln
 885 890 895

a Leu Ser Glu Phe Lys Ala Met Asp Ser Ile
 900 905

!10> 177

!11> 176

!12> PRT

!13> Homo sapiens

!00> 177

st Thr Met Cys Ser Gly Ala Arg Leu Ala Leu Leu Val Tyr Gly Ile
 5 10 15

e Met His Ser Ser Val Tyr Ser Ser Pro Ala Ala Ala Gly Leu Arg
 20 25 30

e Pro Gly Ile Arg Pro Glu Glu Glu Ala Tyr Gly Glu Asp Gly Asn
 35 40 45

o Leu Pro Asp Phe Gly Gly Ser Glu Pro Pro Gly Ala Gly Ser Pro
 50 55 60

a Ser Ala Pro Arg Ala Ala Ala Ala Trp Tyr Arg Pro Ala Gly Arg
 70 75 80

g Asp Val Ala His Gly Ile Leu Asn Glu Ala Tyr Arg Lys Val Leu
 85 90 95

p Gln Leu Ser Ala Gly Lys His Leu Gln Ser Leu Val Ala Arg Gly
 100 105 110

l Gly Gly Ser Leu Gly Gly Gly Ala Gly Asp Asp Ala Glu Pro Leu
 115 120 125

eolf-seql-S000001.txt

er Lys Arg His Ser Asp Gly Ile Phe Thr Asp Ser Tyr Ser Arg Tyr
 130 135 140

g Lys Gln Met Ala Val Lys Lys Tyr Leu Ala Ala Val Leu Gly Lys
 15 150 155 160

g Tyr Lys Gln Arg Val Lys Asn Lys Gly Arg Arg Ile Ala Tyr Leu
 165 170 175

110> 178

111> 298

112> PRT

113> Homo sapiens

100> 178

et Ser Leu Tyr Pro Ser Leu Glu Asp Leu Lys Val Asp Lys Val Ile
 5 10 15

n Ala Gln Thr Ala Phe Ser Ala Asn Pro Ala Asn Pro Ala Ile Leu
 20 25 30

er Glu Ala Ser Ala Pro Ile Pro His Asp Gly Asn Leu Tyr Pro Arg
 35 40 45

u Tyr Pro Glu Leu Ser Gln Tyr Met Gly Leu Ser Leu Asn Glu Glu
 50 55 60

u Ile Arg Ala Ser Val Ala Val Val Ser Gly Ala Pro Leu Gln Gly
 70 75 80

n Leu Val Ala Arg Pro Ser Ser Ile Asn Tyr Met Val Ala Pro Val
 85 90 95

r Gly Asn Asp Val Gly Ile Arg Arg Ala Glu Ile Lys Gln Gly Ile
 100 105 110

g Glu Val Ile Leu Cys Lys Asp Gln Asp Gly Lys Ile Gly Leu Arg
 115 120 125

u Lys Ser Ile Asp Asn Gly Ile Phe Val Gln Leu Val Gln Ala Asn
 130 135 140

eolf-seql-S000001.txt

```

er Pro Ala Ser Leu Val Gly Leu Arg Phe Gly Asp Gln Val Leu Gln
15          150          155          160

e Asn Gly Glu Asn Cys Ala Gly Trp Ser Ser Asp Lys Ala His Lys
          165          170          175

l Leu Lys Gln Ala Phe Gly Glu Lys Ile Thr Met Thr Ile Arg Asp
          180          185          190

g Pro Phe Glu Arg Thr Ile Thr Met His Lys Asp Ser Thr Gly His
          195          200          205

l Gly Phe Ile Phe Lys Asn Gly Lys Ile Thr Ser Ile Val Lys Asp
210          215          220

r Ser Ala Ala Arg Asn Gly Leu Leu Thr Glu His Asn Ile Cys Glu
5          230          235          240

e Asn Gly Gln Asn Val Ile Gly Leu Lys Asp Ser Gln Ile Ala Asp
          245          250          255

e Leu Ser Thr Ser Gly Thr Val Val Thr Ile Thr Ile Met Pro Ala
          260          265          270

e Ile Phe Glu His Ile Ile Lys Arg Met Ala Pro Ser Ile Met Lys
275          280          285

r Leu Met Asp His Thr Ile Pro Glu Val
290          295

10> 179
11> 1621
12> PRT
13> Homo sapiens

00> 179

t Ala Lys Ser Gly Gly Cys Gly Ala Gly Ala Gly Val Gly Gly Gly
          5          10          15

n Gly Ala Leu Thr Trp Val Asn Asn Ala Ala Lys Lys Glu Glu Ser
20          25          30

```

eolf-seql-S000001.txt

u Thr Ala Asn Lys Asn Asp Ser Ser Lys Lys Leu Ser Val Glu Arg
 35 40 45
 l Tyr Gln Lys Lys Thr Gln Leu Glu His Ile Leu Leu Arg Pro Asp
 50 55 60
 r Tyr Ile Gly Ser Val Glu Pro Leu Thr Gln Phe Met Trp Val Tyr
 70 75 80
 p Glu Asp Val Gly Met Asn Cys Arg Glu Val Thr Phe Val Pro Gly
 85 90 95
 u Tyr Lys Ile Phe Asp Glu Ile Leu Val Asn Ala Ala Asp Asn Lys
 100 105 110
 n Arg Asp Lys Asn Met Thr Cys Ile Lys Val Ser Ile Asp Pro Glu
 115 120 125
 r Asn Ile Ile Ser Ile Trp Asn Asn Gly Lys Gly Ile Pro Val Val
 130 135 140
 u His Lys Val Glu Lys Val Tyr Val Pro Ala Leu Ile Phe Gly Gln
 150 155 160
 u Leu Thr Ser Ser Asn Tyr Asp Asp Asp Glu Lys Lys Val Thr Gly
 165 170 175
 y Arg Asn Gly Tyr Gly Ala Lys Leu Cys Asn Ile Phe Ser Thr Lys
 180 185 190
 e Thr Val Glu Thr Ala Cys Lys Glu Tyr Lys His Ser Phe Lys Gln
 195 200 205
 r Trp Met Asn Asn Met Met Lys Thr Ser Glu Ala Lys Ile Lys His
 210 215 220
 e Asp Gly Glu Asp Tyr Thr Cys Ile Thr Phe Gln Pro Asp Leu Ser
 230 235 240
 s Phe Lys Met Glu Lys Leu Asp Lys Asp Ile Val Ala Leu Met Thr
 245 250 255

eolf-seql-S000001.txt

```

rg Arg Ala Tyr Asp Leu Ala Gly Ser Cys Arg Gly Val Lys Val Met
    260                                265                                270

ne Asn Gly Lys Lys Leu Pro Val Asn Gly Phe Arg Ser Tyr Val Asp
    275                                280                                285

eu Tyr Val Lys Asp Lys Leu Asp Glu Thr Gly Val Ala Leu Lys Val
    290                                295                                300

.e His Glu Leu Ala Asn Glu Arg Trp Asp Val Cys Leu Thr Leu Ser
    305                                310                                315                                320

.u Lys Gly Phe Gln Gln Ile Ser Phe Val Asn Ser Ile Ala Thr Thr
    325                                330                                335

's Gly Gly Arg His Val Asp Tyr Val Val Asp Gln Val Val Gly Lys
    340                                345                                350

.u Ile Glu Val Val Lys Lys Lys Asn Lys Ala Gly Val Ser Val Lys
    355                                360                                365

.o Phe Gln Val Lys Asn His Ile Trp Val Phe Ile Asn Cys Leu Ile
    370                                375                                380

.u Asn Pro Thr Phe Asp Ser Gln Thr Lys Glu Asn Met Thr Leu Gln
    385                                390                                395                                400

.o Lys Ser Phe Gly Ser Lys Cys Gln Leu Ser Glu Lys Phe Phe Lys
    405                                410                                415

a Ala Ser Asn Cys Gly Ile Val Glu Ser Ile Leu Asn Trp Val Lys
    420                                425                                430

e Lys Ala Gln Thr Gln Leu Asn Lys Lys Cys Ser Ser Val Lys Tyr
    435                                440                                445

r Lys Ile Lys Gly Ile Pro Lys Leu Asp Asp Ala Asn Asp Ala Gly
    450                                455                                460

y Lys His Ser Leu Glu Cys Thr Leu Ile Leu Thr Glu Gly Asp Ser
    465                                470                                475                                480

```

eolf-seql-S000001.txt

a Lys Ser Leu Ala Val Ser Gly Leu Gly Val Ile Gly Arg Asp Arg
 485 490 495
 r Gly Val Phe Pro Leu Arg Gly Lys Ile Leu Asn Val Arg Glu Ala
 500 505 510
 r His Lys Gln Ile Met Glu Asn Ala Glu Ile Asn Asn Ile Ile Lys
 515 520 525
 e Val Gly Leu Gln Tyr Lys Lys Ser Tyr Asp Asp Ala Glu Ser Leu
 530 535 540
 s Thr Leu Arg Tyr Gly Lys Ile Met Ile Met Thr Asp Gln Asp Gln
 5 550 555 560
 p Gly Ser His Ile Lys Gly Leu Leu Ile Asn Phe Ile His His Asn
 565 570 575
 p Pro Ser Leu Leu Lys His Gly Phe Leu Glu Glu Phe Ile Thr Pro
 580 585 590
 e Val Lys Ala Ser Lys Asn Lys Gln Glu Leu Ser Phe Tyr Ser Ile
 595 600 605
 o Glu Phe Asp Glu Trp Lys Lys His Ile Glu Asn Gln Lys Ala Trp
 610 615 620
 s Ile Lys Tyr Tyr Lys Gly Leu Gly Thr Ser Thr Ala Lys Glu Ala
 5 630 635 640
 s Glu Tyr Phe Ala Asp Met Glu Arg His Arg Ile Leu Phe Arg Tyr
 645 650 655
 a Gly Pro Glu Asp Asp Ala Ala Ile Thr Leu Ala Phe Ser Lys Lys
 660 665 670
 s Ile Asp Asp Arg Lys Glu Trp Leu Thr Asn Phe Met Glu Asp Arg
 675 680 685
 g Gln Arg Arg Leu His Gly Leu Pro Glu Gln Phe Leu Tyr Gly Thr

eolf-seql-S000001.txt

690

695

700

la Thr Lys His Leu Thr Tyr Asn Asp Phe Ile Asn Lys Glu Leu Ile
 05 710 715 720

eu Phe Ser Asn Ser Asp Asn Glu Arg Ser Ile Pro Ser Leu Val Asp
 725 730 735

ly Phe Lys Pro Gly Gln Arg Lys Val Leu Phe Thr Cys Phe Lys Arg
 740 745 750

sn Asp Lys Arg Glu Val Lys Val Ala Gln Leu Ala Gly Ser Val Ala
 755 760 765

lu Met Ser Ala Tyr His His Gly Glu Gln Ala Leu Met Met Thr Ile
 770 775 780

al Asn Leu Ala Gln Asn Phe Val Gly Ser Asn Asn Ile Asn Leu Leu
 35 790 795 800

..n Pro Ile Gly Gln Phe Gly Thr Arg Leu His Gly Gly Lys Asp Ala
 805 810 815

..a Ser Pro Arg Tyr Ile Phe Thr Met Leu Ser Thr Leu Ala Arg Leu
 820 825 830

..u Phe Pro Ala Val Asp Asp Asn Leu Leu Lys Phe Leu Tyr Asp Asp
 835 840 845

..n Gln Arg Val Glu Pro Glu Trp Tyr Ile Pro Ile Ile Pro Met Val
 850 855 860

..u Ile Asn Gly Ala Glu Gly Ile Gly Thr Gly Trp Ala Cys Lys Leu
 5 870 875 880

..o Asn Tyr Asp Ala Arg Glu Ile Val Asn Asn Val Arg Arg Met Leu
 885 890 895

p Gly Leu Asp Pro His Pro Met Leu Pro Asn Tyr Lys Asn Phe Lys
 900 905 910

eolf-seql-S000001.txt

ly Thr Ile Gln Glu Leu Gly Gln Asn Gln Tyr Ala Val Ser Gly Glu
 915 920 925

le Phe Val Val Asp Arg Asn Thr Val Glu Ile Thr Glu Leu Pro Val
 930 935 940

g Thr Trp Thr Gln Val Tyr Lys Glu Gln Val Leu Glu Pro Met Leu
 945 950 955 960

n Gly Thr Asp Lys Thr Pro Ala Leu Ile Ser Asp Tyr Lys Glu Tyr
 965 970 975

s Thr Asp Thr Thr Val Lys Phe Val Val Lys Met Thr Glu Glu Lys
 980 985 990

u Ala Gln Ala Glu Ala Ala Gly Leu His Lys Val Phe Lys Leu Gln
 995 1000 1005

r Thr Leu Thr Cys Asn Ser Met Val Leu Phe Asp His Met Gly
 1010 1015 1020

s Leu Lys Lys Tyr Glu Thr Val Gln Asp Ile Leu Lys Glu Phe
 1025 1030 1035

e Asp Leu Arg Leu Ser Tyr Tyr Gly Leu Arg Lys Glu Trp Leu
 1040 1045 1050

l Gly Met Leu Gly Ala Glu Ser Thr Lys Leu Asn Asn Gln Ala
 1055 1060 1065

g Phe Ile Leu Glu Lys Ile Gln Gly Lys Ile Thr Ile Glu Asn
 1070 1075 1080

g Ser Lys Lys Asp Leu Ile Gln Met Leu Val Gln Arg Gly Tyr
 1085 1090 1095

u Ser Asp Pro Val Lys Ala Trp Lys Glu Ala Gln Glu Lys Ala
 1100 1105 1110

a Glu Glu Asp Glu Thr Gln Asn Gln His Asp Asp Ser Ser Ser
 1115 1120 1125

eolf-seql-S000001.txt

```

sp Ser Gly Thr Pro Ser Gly Pro Asp Phe Asn Tyr Ile Leu Asn
 1130 1135 1140

et Ser Leu Trp Ser Leu Thr Lys Glu Lys Val Glu Glu Leu Ile
 1145 1150 1155

's Gln Arg Asp Ala Lys Gly Arg Glu Val Asn Asp Leu Lys Arg
 1160 1165 1170

's Ser Pro Ser Asp Leu Trp Lys Glu Asp Leu Ala Ala Phe Val
 1175 1180 1185

.u Glu Leu Asp Lys Val Glu Ser Gln Glu Arg Glu Asp Val Leu
 1190 1195 1200

.a Gly Met Ser Gly Lys Ala Ile Lys Gly Lys Val Gly Lys Pro
 1205 1210 1215

's Val Lys Lys Leu Gln Leu Glu Glu Thr Met Pro Ser Pro Tyr
 1220 1225 1230

.y Arg Arg Ile Ile Pro Glu Ile Thr Ala Met Lys Ala Asp Ala
 1235 1240 1245

.r Lys Lys Leu Leu Lys Lys Lys Lys Gly Asp Leu Asp Thr Ala
 1250 1255 1260

a Val Lys Val Glu Phe Asp Glu Glu Phe Ser Gly Ala Pro Val
 1265 1270 1275

u Gly Ala Gly Glu Glu Ala Leu Thr Pro Ser Val Pro Ile Asn
 1280 1285 1290

s Gly Pro Lys Pro Lys Arg Glu Lys Lys Glu Pro Gly Thr Arg
 1295 1300 1305

l Arg Lys Thr Pro Thr Ser Ser Gly Lys Pro Ser Ala Lys Lys
 1310 1315 1320

l Lys Lys Arg Asn Pro Trp Ser Asp Asp Glu Ser Lys Ser Glu
 1325 1330 1335

```

eolf-seql-S000001.txt

```

er Asp  Leu Glu Glu Thr Glu  Pro Val Val Ile Pro  Arg Asp Ser
  1340                1345                1350

u Leu   Arg Arg Ala Ala Ala  Glu Arg Pro Lys Tyr  Thr Phe Asp
  1355                1360                1365

e Ser   Glu Glu Glu Asp Asp  Asp Ala Asp Asp Asp  Asp Asp Asp
  1370                1375                1380

n Asn   Asp Leu Glu Glu Leu  Lys Val Lys Ala Ser  Pro Ile Thr
  1385                1390                1395

n Asp   Gly Glu Asp Glu Phe  Val Pro Ser Asp Gly  Leu Asp Lys
  1400                1405                1410

p Glu   Tyr Thr Phe Ser Pro  Gly Lys Ser Lys Ala  Thr Pro Glu
  1415                1420                1425

s Ser   Leu His Asp Lys Lys  Ser Gln Asp Phe Gly  Asn Leu Phe
  1430                1435                1440

r Phe   Pro Ser Tyr Ser Gln  Lys Ser Glu Asp Asp  Ser Ala Lys
  1445                1450                1455

e Asp   Ser Asn Glu Glu Asp  Ser Ala Ser Val Phe  Ser Pro Ser
  1460                1465                1470

e Gly   Leu Lys Gln Thr Asp  Lys Val Pro Ser Lys  Thr Val Ala
  1475                1480                1485

a Lys   Lys Gly Lys Pro Ser  Ser Asp Thr Val Pro  Lys Pro Lys
  1490                1495                1500

g Ala   Pro Lys Gln Lys Lys  Val Val Glu Ala Val  Asn Ser Asp
  1505                1510                1515

r Asp   Ser Glu Phe Gly Ile  Pro Lys Lys Thr Thr  Thr Pro Lys
  1520                1525                1530

y Lys   Gly Arg Gly Ala Lys  Lys Arg Lys Ala Ser  Gly Ser Glu

```

eolf-seql-S000001.txt

```

1535                                1540                                1545

sn Glu  Gly Asp Tyr Asn Pro  Gly Arg Lys Thr Ser  Lys Thr Thr
1550                                1555                                1560

er Lys  Lys Pro Lys Lys Thr  Ser Phe Asp Gln Asp  Ser Asp Val
1565                                1570                                1575

sp Ile  Phe Pro Ser Asp Phe  Pro Thr Glu Pro Pro  Ser Leu Pro
1580                                1585                                1590

rg Thr  Gly Arg Ala Arg Lys  Glu Val Lys Tyr Phe  Ala Glu Ser
1595                                1600                                1605

sp Glu  Glu Glu Asp Asp Val  Asp Phe Ala Met Phe  Asn
1610                                1615                                1620

:10> 180
:11> 228
:12> PRT
:13> Homo sapiens

:00> 180

t Leu Ser Arg Cys Arg Ser Gly Leu Leu His Val Leu Gly Leu Ser
      5                                10                                15

e Leu Leu Gln Thr Arg Arg Pro Ile Leu Leu Cys Ser Pro Arg Leu
      20                                25                                30

t Lys Pro Leu Val Val Phe Val Leu Gly Gly Pro Gly Ala Gly Lys
      35                                40                                45

y Thr Gln Cys Ala Arg Ile Val Glu Lys Tyr Gly Tyr Thr His Leu
      50                                55                                60

r Ala Gly Glu Leu Leu Arg Asp Glu Arg Lys Asn Pro Asp Ser Gln
      70                                75                                80

r Gly Glu Leu Ile Glu Lys Tyr Ile Lys Glu Gly Lys Ile Val Pro
      85                                90                                95

l Glu Ile Thr Ile Ser Leu Leu Lys Arg Glu Met Asp Gln Thr Met

```

eolf-seql-S000001.txt

100

105

110

a Ala Asn Ala Gln Lys Asn Lys Phe Leu Ile Asp Gly Phe Pro Arg
 115 120 125

n Gln Asp Asn Leu Gln Gly Trp Asn Lys Thr Met Asp Gly Lys Ala
 130 135 140

p Val Ser Phe Val Leu Phe Phe Asp Cys Asn Asn Glu Ile Cys Ile
 5 150 155 160

u Arg Cys Leu Glu Arg Gly Lys Ser Ser Gly Arg Ser Asp Asp Asn
 165 170 175

g Glu Ser Leu Glu Lys Arg Ile Gln Thr Tyr Leu Gln Ser Thr Lys
 180 185 190

o Ile Ile Asp Leu Tyr Glu Glu Met Gly Lys Val Lys Lys Ile Asp
 195 200 205

a Ser Lys Ser Val Asp Glu Val Phe Asp Glu Val Val Gln Ile Phe
 210 215 220

p Lys Glu Gly
 5

10> 181
 11> 268
 12> PRT
 13> Homo sapiens

00> 181

t Val Leu Glu Ser Thr Met Val Cys Val Asp Asn Ser Glu Tyr Met
 5 10 15

g Asn Gly Asp Phe Leu Pro Thr Arg Leu Gln Ala Gln Gln Asp Ala
 20 25 30

l Asn Ile Val Cys His Ser Lys Thr Arg Ser Asn Pro Glu Asn Asn
 35 40 45

l Gly Leu Ile Thr Leu Ala Asn Asp Cys Glu Val Leu Thr Thr Leu

eolf-seql-S000001.txt

```

50                                     55                                     60

ar Pro Asp Thr Gly Arg Ile Leu Ser Lys Leu His Thr Val Gln Pro
5                                     70                                     75                                     80

ys Gly Lys Ile Thr Phe Cys Thr Gly Ile Arg Val Ala His Leu Ala
85                                     90                                     95

eu Lys His Arg Gln Gly Lys Asn His Lys Met Arg Ile Ile Ala Phe
100                                     105                                     110

al Gly Ser Pro Val Glu Asp Asn Glu Lys Asp Leu Val Lys Leu Ala
115                                     120                                     125

's Arg Leu Lys Lys Glu Lys Val Asn Val Asp Ile Ile Asn Phe Gly
130                                     135                                     140

u Glu Glu Val Asn Thr Glu Lys Leu Thr Ala Phe Val Asn Thr Leu
15                                     150                                     155                                     160

n Gly Lys Asp Gly Thr Gly Ser His Leu Val Thr Val Pro Pro Gly
165                                     170                                     175

o Ser Leu Ala Asp Ala Leu Ile Ser Ser Pro Ile Leu Ala Gly Glu
180                                     185                                     190

y Gly Ala Met Leu Gly Leu Gly Ala Ser Asp Phe Glu Phe Gly Val
195                                     200                                     205

p Pro Ser Ala Asp Pro Glu Leu Ala Leu Ala Leu Arg Val Ser Met
210                                     215                                     220

u Glu Gln Arg Gln Arg Gln Glu Glu Glu Ala Arg Arg Ala Ala Ala
5                                     230                                     235                                     240

a Ser Ala Ala Glu Ala Gly Ile Ala Thr Thr Gly Thr Glu Gly Glu
245                                     250                                     255

g Gly Gly Ile Arg Ser Pro Gly Thr Ala Gly Cys
260                                     265

```

eolf-seql-S000001.txt

```

10> 182
11> 162
12> PRT
13> Homo sapiens

00> 182

t Lys Glu Thr Ile Met Asn Gln Glu Lys Leu Ala Lys Leu Gln Ala
   5                               10                      15

n Val Arg Ile Gly Gly Lys Gly Thr Ala Arg Arg Lys Lys Lys Val
   20                               25                      30

l His Arg Thr Ala Thr Ala Asp Asp Lys Lys Leu Gln Phe Ser Leu
   35                               40                      45

s Lys Leu Gly Val Asn Asn Ile Ser Gly Ile Glu Glu Val Asn Met
   50                               55                      60

e Thr Asn Gln Gly Thr Val Ile His Phe Asn Asn Pro Lys Val Gln
   70                               75                      80

a Ser Leu Ala Ala Asn Thr Phe Thr Ile Thr Gly His Ala Glu Thr
   85                               90                      95

s Gln Leu Thr Glu Met Leu Pro Ser Ile Leu Asn Gln Leu Gly Ala
  100                               105                      110

p Ser Leu Thr Ser Leu Arg Arg Leu Ala Glu Ala Leu Pro Lys Gln
  115                               120                      125

r Val Asp Gly Lys Ala Pro Leu Ala Thr Gly Glu Asp Asp Asp Asp
  130                               135                      140

u Val Pro Asp Leu Val Glu Asn Phe Asp Glu Ala Ser Lys Asn Glu
   5                               150                      155                      160

a Asn

```

```

10> 183
11> 193
12> PRT
13> Homo sapiens

```

eolf-seql-S000001.txt

100> 183

et Ala Ala Ile Arg Lys Lys Leu Val Ile Val Gly Asp Gly Ala Cys
 5 10 15

y Lys Thr Cys Leu Leu Ile Val Phe Ser Lys Asp Gln Phe Pro Glu
 20 25 30

al Tyr Val Pro Thr Val Phe Glu Asn Tyr Val Ala Asp Ile Glu Val
 35 40 45

sp Gly Lys Gln Val Glu Leu Ala Leu Trp Asp Thr Ala Gly Gln Glu
 50 55 60

sp Tyr Asp Arg Leu Arg Pro Leu Ser Tyr Pro Asp Thr Asp Val Ile
 70 75 80

u Met Cys Phe Ser Ile Asp Ser Pro Asp Ser Leu Glu Asn Ile Pro
 85 90 95

u Lys Trp Thr Pro Glu Val Lys His Phe Cys Pro Asn Val Pro Ile
 100 105 110

e Leu Val Gly Asn Lys Lys Asp Leu Arg Asn Asp Glu His Thr Arg
 115 120 125

g Glu Leu Ala Lys Met Lys Gln Glu Pro Val Lys Pro Glu Glu Gly
 130 135 140

g Asp Met Ala Asn Arg Ile Gly Ala Phe Gly Tyr Met Glu Cys Ser
 5 150 155 160

a Lys Thr Lys Asp Gly Val Arg Glu Val Phe Glu Met Ala Thr Arg
 165 170 175

a Ala Leu Gln Ala Arg Arg Gly Lys Lys Lys Ser Gly Cys Leu Val
 180 185 190

u

eolf-seql-S000001.txt

```

:10> 184
:11> 334
:12> PRT
:13> Homo sapiens

00> 184

t Ala Thr Leu Lys Glu Lys Leu Ile Ala Pro Val Ala Glu Glu Glu
   5                                10                        15

a Thr Val Pro Asn Asn Lys Ile Thr Val Val Gly Val Gly Gln Val
   20                                25                        30

y Met Ala Cys Ala Ile Ser Ile Leu Gly Lys Ser Leu Ala Asp Glu
   35                                40                        45

u Ala Leu Val Asp Val Leu Glu Asp Lys Leu Lys Gly Glu Met Met
   50                                55                        60

p Leu Gln His Gly Ser Leu Phe Leu Gln Thr Pro Lys Ile Val Ala
   70                                75                        80

p Lys Asp Tyr Ser Val Thr Ala Asn Ser Lys Ile Val Val Val Thr
   85                                90                        95

a Gly Val Arg Gln Gln Glu Gly Glu Ser Arg Leu Asn Leu Val Gln
  100                                105                        110

g Asn Val Asn Val Phe Lys Phe Ile Ile Pro Gln Ile Val Lys Tyr
  115                                120                        125

r Pro Asp Cys Ile Ile Ile Val Val Ser Asn Pro Val Asp Ile Leu
  130                                135                        140

r Tyr Val Thr Trp Lys Leu Ser Gly Leu Pro Lys His Arg Val Ile
   5                                150                        155                        160

y Ser Gly Cys Asn Leu Asp Ser Ala Arg Phe Arg Tyr Leu Met Ala
  165                                170                        175

l Lys Leu Gly Ile His Pro Ser Ser Cys His Gly Trp Ile Leu Gly
  180                                185                        190

```

eolf-seql-S000001.txt

lu His Gly Asp Ser Ser Val Ala Val Trp Ser Gly Val Asn Val Ala
 195 200 205

ly Val Ser Leu Gln Glu Leu Asn Pro Glu Met Gly Thr Asp Asn Asp
 210 215 220

er Glu Asn Trp Lys Glu Val His Lys Met Val Val Glu Ser Ala Tyr
 225 230 235 240

lu Val Ile Lys Leu Lys Gly Tyr Thr Asn Trp Ala Ile Gly Leu Ser
 245 250 255

al Ala Asp Leu Ile Glu Ser Met Leu Lys Asn Leu Ser Arg Ile His
 260 265 270

to Val Ser Thr Met Val Lys Gly Met Tyr Gly Ile Glu Asn Glu Val
 275 280 285

ie Leu Ser Leu Pro Cys Ile Leu Asn Ala Arg Gly Leu Thr Ser Val
 290 295 300

ie Asn Gln Lys Leu Lys Asp Asp Glu Val Ala Gln Leu Lys Lys Ser
 305 310 315 320

ia Asp Thr Leu Trp Asp Ile Gln Lys Asp Leu Lys Asp Leu
 325 330

10> 185

11> 343

12> PRT

13> Homo sapiens

00> 185

t Trp Pro Asn Gly Ser Ser Leu Gly Pro Cys Phe Arg Pro Thr Asn
 5 10 15

e Thr Leu Glu Glu Arg Arg Leu Ile Ala Ser Pro Trp Phe Ala Ala
 20 25 30

r Phe Cys Val Val Gly Leu Ala Ser Asn Leu Leu Ala Leu Ser Val
 35 40 45

eolf-seql-S000001.txt

eu Ala Gly Ala Arg Gln Gly Gly Ser His Thr Arg Ser Ser Phe Leu
 50 55 60

ar Phe Leu Cys Gly Leu Val Leu Thr Asp Phe Leu Gly Leu Leu Val
 5 70 75 80

ar Gly Thr Ile Val Val Ser Gln His Ala Ala Leu Phe Glu Trp His
 85 90 95

la Val Asp Pro Gly Cys Arg Leu Cys Arg Phe Met Gly Val Val Met
 100 105 110

le Phe Phe Gly Leu Ser Pro Leu Leu Leu Gly Ala Ala Met Ala Ser
 115 120 125

lu Arg Tyr Leu Gly Ile Thr Arg Pro Phe Ser Arg Pro Ala Val Ala
 130 135 140

er Gln Arg Arg Ala Trp Ala Thr Val Gly Leu Val Trp Ala Ala Ala
 145 150 155 160

eu Ala Leu Gly Leu Leu Pro Leu Leu Gly Val Gly Arg Tyr Thr Val
 165 170 175

n Tyr Pro Gly Ser Trp Cys Phe Leu Thr Leu Gly Ala Glu Ser Gly
 180 185 190

sp Val Ala Phe Gly Leu Leu Phe Ser Met Leu Gly Gly Leu Ser Val
 195 200 205

y Leu Ser Phe Leu Leu Asn Thr Val Ser Val Ala Thr Leu Cys His
 210 215 220

l Tyr His Gly Gln Glu Ala Ala Gln Gln Arg Pro Arg Asp Ser Glu
 5 230 235 240

l Glu Met Met Ala Gln Leu Leu Gly Ile Met Val Val Ala Ser Val
 245 250 255

s Trp Leu Pro Leu Leu Val Phe Ile Ala Gln Thr Val Leu Arg Asn
 260 265 270

eolf-seql-S000001.txt

Pro Ala Met Ser Pro Ala Gly Gln Leu Ser Arg Thr Thr Glu Lys
275 280 285

Leu Leu Leu Ile Tyr Leu Arg Val Ala Thr Trp Asn Gln Ile Leu Asp
290 295 300

Trp Val Tyr Ile Leu Phe Arg Arg Ala Val Leu Arg Arg Leu Gln
305 310 315 320

Arg Leu Ser Thr Arg Pro Arg Ser Leu Ser Leu Gln Pro Gln Leu
325 330 335

Gln Arg Ser Gly Leu Gln
340

:10> 186

:11> 477

:12> PRT

:13> Homo sapiens

:00> 186

Ala Asn Met Gln Gly Leu Val Glu Arg Leu Glu Arg Ala Val Ser
5 10 15

Leu Glu Ser Leu Ser Ala Glu Ser His Arg Pro Pro Gly Asn Cys
20 25 30

Glu Val Asn Gly Val Ile Ala Gly Val Ala Pro Ser Val Glu Ala
35 40 45

Asp Lys Leu Met Asp Ser Met Val Ala Glu Phe Leu Lys Asn Ser
50 55 60

Glu Ile Leu Ala Gly Asp Val Glu Thr His Ala Glu Met Val His Ser
70 75 80

Phe Gln Ala Gln Arg Ala Phe Leu Leu Met Ala Ser Gln Tyr Gln
85 90 95

Pro His Glu Asn Asp Val Ala Ala Leu Leu Lys Pro Ile Ser Glu
100 105 110

eolf-seql-S000001.txt

```

/s Ile Gln Glu Ile Gln Thr Phe Arg Glu Arg Asn Arg Gly Ser Asn
   115                               120                               125

et Phe Asn His Leu Ser Ala Val Ser Glu Ser Ile Pro Ala Leu Gly
   130                               135                               140

p Ile Ala Val Ser Pro Lys Pro Gly Pro Tyr Val Lys Glu Met Asn
15                               150                               155                               160

p Ala Ala Thr Phe Tyr Thr Asn Arg Val Leu Lys Asp Tyr Lys His
   165                               170                               175

er Asp Leu Arg His Val Asp Trp Val Lys Ser Tyr Leu Asn Ile Trp
   180                               185                               190

er Glu Leu Gln Ala Tyr Ile Lys Glu His His Thr Thr Gly Leu Thr
   195                               200                               205

p Ser Lys Thr Gly Pro Val Ala Ser Thr Val Ser Ala Phe Ser Val
210                               215                               220

u Ser Ser Gly Pro Gly Leu Pro Pro Pro Pro Pro Pro Leu Pro Pro
5                               230                               235                               240

o Gly Pro Pro Pro Leu Phe Glu Asn Glu Gly Lys Lys Glu Glu Ser
   245                               250                               255

r Pro Ser Arg Ser Ala Leu Phe Ala Gln Leu Asn Gln Gly Glu Ala
   260                               265                               270

e Thr Lys Gly Leu Arg His Val Thr Asp Asp Gln Lys Thr Tyr Lys
   275                               280                               285

n Pro Ser Leu Arg Ala Gln Gly Gly Gln Thr Gln Ser Pro Thr Lys
290                               295                               300

r His Thr Pro Ser Pro Thr Ser Pro Lys Ser Tyr Pro Ser Gln Lys
5                               310                               315                               320

s Ala Pro Val Leu Glu Leu Glu Gly Lys Lys Trp Arg Val Glu Tyr
   325                               330                               335

```


eolf-seql-S000001.txt

ln Glu Asp Arg Asn Asp Leu Val Ile Ser Glu Thr Glu Leu Lys Gln
 340 345 350

al Ala Tyr Ile Phe Lys Cys Glu Lys Ser Thr Ile Gln Ile Lys Gly
 355 360 365

ys Val Asn Ser Ile Ile Ile Asp Asn Cys Lys Lys Leu Gly Leu Val
 370 375 380

ne Asp Asn Val Val Gly Ile Val Glu Val Ile Asn Ser Gln Asp Ile
 385 390 395 400

ln Ile Gln Val Met Gly Arg Val Pro Thr Ile Ser Ile Asn Lys Thr
 405 410 415

u Gly Cys His Ile Tyr Leu Ser Glu Asp Ala Leu Asp Cys Glu Ile
 420 425 430

al Ser Ala Lys Ser Ser Glu Met Asn Ile Leu Ile Pro Gln Asp Gly
 435 440 445

sp Tyr Arg Glu Phe Pro Ile Pro Glu Gln Phe Lys Thr Ala Trp Asp
 450 455 460

y Ser Lys Leu Ile Thr Glu Pro Ala Glu Ile Met Ala
 465 470 475

10> 187

11> 309

12> PRT

13> Homo sapiens

00> 187

t Asp Glu Lys Val Phe Thr Lys Glu Leu Asp Gln Trp Ile Glu Gln
 5 10 15

u Asn Glu Cys Lys Gln Leu Ser Glu Ser Gln Val Lys Ser Leu Cys
 20 25 30

u Lys Ala Lys Glu Ile Leu Thr Lys Glu Ser Asn Val Gln Glu Val
 35 40 45

eolf-seql-S000001.txt

rg Cys Pro Val Thr Val Cys Gly Asp Val His Gly Gln Phe His Asp
 50 55 60

eu Met Glu Leu Phe Arg Ile Gly Gly Lys Ser Pro Asp Thr Asn Tyr
 5 70 75 80

eu Phe Met Gly Asp Tyr Val Asp Arg Gly Tyr Tyr Ser Val Glu Thr
 85 90 95

al Thr Leu Leu Val Ala Leu Lys Val Arg Tyr Arg Glu Arg Ile Thr
 100 105 110

le Leu Arg Gly Asn His Glu Ser Arg Gln Ile Thr Gln Val Tyr Gly
 115 120 125

le Tyr Asp Glu Cys Leu Arg Lys Tyr Gly Asn Ala Asn Val Trp Lys
 130 135 140

rr Phe Thr Asp Leu Phe Asp Tyr Leu Pro Leu Thr Ala Leu Val Asp
 15 150 155 160

y Gln Ile Phe Cys Leu His Gly Gly Leu Ser Pro Ser Ile Asp Thr
 165 170 175

eu Asp His Ile Arg Ala Leu Asp Arg Leu Gln Glu Val Pro His Glu
 180 185 190

y Pro Met Cys Asp Leu Leu Trp Ser Asp Pro Asp Asp Arg Gly Gly
 195 200 205

p Gly Ile Ser Pro Arg Gly Ala Gly Tyr Thr Phe Gly Gln Asp Ile
 210 215 220

r Glu Thr Phe Asn His Ala Asn Gly Leu Thr Leu Val Ser Arg Ala
 5 230 235 240

s Gln Leu Val Met Glu Gly Tyr Asn Trp Cys His Asp Arg Asn Val
 245 250 255

l Thr Ile Phe Ser Ala Pro Asn Tyr Cys Tyr Arg Cys Gly Asn Gln

eolf-seql-S000001.txt

260

265

270

la Ala Ile Met Glu Leu Asp Asp Thr Leu Lys Tyr Ser Phe Leu Gln
 275 280 285

he Asp Pro Ala Pro Arg Arg Gly Glu Pro His Val Thr Arg Arg Thr
 290 295 300

ro Asp Tyr Phe Leu
 305

210> 188

211> 169

212> PRT

213> Homo sapiens

400> 188

et Ala Ala Leu Leu Leu Arg His Val Gly Arg His Cys Leu Arg Ala
 5 10 15

is Phe Ser Pro Gln Leu Cys Ile Arg Asn Ala Val Pro Leu Gly Thr
 20 25 30

ir Ala Lys Glu Glu Met Glu Arg Phe Trp Asn Lys Asn Ile Gly Ser
 35 40 45

sn Arg Pro Leu Ser Pro His Ile Thr Ile Tyr Ser Trp Ser Leu Pro
 50 55 60

et Ala Met Ser Ile Cys His Arg Gly Thr Gly Ile Ala Leu Ser Ala
 65 70 75 80

y Val Ser Leu Phe Gly Met Ser Ala Leu Leu Leu Pro Gly Asn Phe
 85 90 95

u Ser Tyr Leu Glu Leu Val Lys Ser Leu Cys Leu Gly Pro Ala Leu
 100 105 110

e His Thr Ala Lys Phe Ala Leu Val Phe Pro Leu Met Tyr His Thr
 115 120 125

p Asn Gly Ile Arg His Leu Met Trp Asp Leu Gly Lys Gly Leu Lys

eolf-seql-S000001.txt
 130 135 140
 le Pro Gln Leu Tyr Gln Ser Gly Val Val Val Leu Val Leu Thr Val
 45 150 155 160
 eu Ser Ser Met Gly Leu Ala Ala Met
 165
 210> 189
 211> 201
 212> PRT
 213> Homo sapiens
 400> 189
 at Thr Glu Lys Ala Pro Glu Pro His Val Glu Glu Asp Asp Asp Asp
 5 10 15
 lu Leu Asp Ser Lys Leu Asn Tyr Lys Pro Pro Pro Gln Lys Ser Leu
 20 25 30
 's Glu Leu Gln Glu Met Asp Lys Asp Asp Glu Ser Leu Ile Lys Tyr
 35 40 45
 's Lys Thr Leu Leu Gly Asp Gly Pro Val Val Thr Asp Pro Lys Ala
 50 55 60
 o Asn Val Val Val Thr Arg Leu Thr Leu Val Cys Glu Ser Ala Pro
 70 75 80
 y Pro Ile Thr Met Asp Leu Thr Gly Asp Leu Glu Ala Leu Lys Lys
 85 90 95
 u Thr Ile Val Leu Lys Glu Gly Ser Glu Tyr Arg Val Lys Ile His
 100 105 110
 e Lys Val Asn Arg Asp Ile Val Ser Gly Leu Lys Tyr Val Gln His
 115 120 125
 : Tyr Arg Thr Gly Val Lys Val Asp Lys Ala Thr Phe Met Val Gly
 130 135 140
 : Tyr Gly Pro Arg Pro Glu Glu Tyr Glu Phe Leu Thr Pro Val Glu

eolf-seql-S000001.txt
 15 150 155 160
 lu Ala Pro Lys Gly Met Leu Ala Arg Gly Thr Tyr His Asn Lys Ser
 165 170 175
 ie Phe Thr Asp Asp Asp Lys Gln Asp His Leu Ser Trp Glu Trp Asn
 180 185 190
 eu Ser Ile Lys Lys Glu Trp Thr Glu
 195 200
 ?10> 190
 ?11> 377
 ?12> PRT
 ?13> Homo sapiens
 100> 190
 et Lys Phe Pro Gly Pro Leu Glu Asn Gln Arg Leu Ser Phe Leu Leu
 5 10 15
 u Lys Ala Ile Thr Arg Glu Ala Gln Met Trp Lys Val Asn Val Arg
 20 25 30
 s Met Pro Ser Asn Gln Asn Val Ser Pro Ser Gln Arg Asp Glu Val
 35 40 45
 e Gln Trp Leu Ala Lys Leu Lys Tyr Gln Phe Asn Leu Tyr Pro Glu
 50 55 60
 r Phe Ala Leu Ala Ser Ser Leu Leu Asp Arg Phe Leu Ala Thr Val
 70 75 80
 s Ala His Pro Lys Tyr Leu Ser Cys Ile Ala Ile Ser Cys Phe Phe
 85 90 95
 u Ala Ala Lys Thr Val Glu Glu Asp Glu Arg Ile Pro Val Leu Lys
 100 105 110
 l Leu Ala Arg Asp Ser Phe Cys Gly Cys Ser Ser Ser Glu Ile Leu
 115 120 125
 g Met Glu Arg Ile Ile Leu Asp Lys Leu Asn Trp Asp Leu His Thr

eolf-seql-S000001.txt

130		135		140
15	a Thr Pro Leu Asp Phe Leu His Ile Phe His Ala Ile Ala Val Ser	150	155	160
	16	165	170	175
	17	175	180	185
	18	185	190	195
	19	195	200	205
	20	205	210	215
	21	215	220	225
	22	225	230	235
	23	235	240	245
	24	245	250	255
	25	255	260	265
	26	265	270	275
	27	275	280	285
	28	285	290	295
	29	295	300	305
	30	305	310	315
	31	315	320	325
	32	325	330	335
	33	335	340	345
	34	345	350	355

eolf-seql-S000001.txt

al Cys Gly Thr Asp Leu Ser Arg Gln Glu Gly His Ala Ser Pro Cys
 355 360 365

ro Pro Leu Gln Pro Val Ser Val Met
 370 375

210> 191
 211> 282
 212> PRT
 213> Homo sapiens

400> 191

et Glu Arg Pro Ser Leu Arg Ala Leu Leu Leu Gly Ala Ala Gly Leu
 5 10 15

eu Leu Leu Leu Leu Pro Leu Ser Ser Ser Ser Ser Asp Thr Cys
 20 25 30

ly Pro Cys Glu Pro Ala Ser Cys Pro Pro Leu Pro Pro Leu Gly Cys
 35 40 45

eu Leu Gly Glu Thr Arg Asp Ala Cys Gly Cys Cys Pro Met Cys Ala
 50 55 60

g Gly Glu Gly Glu Pro Cys Gly Gly Gly Gly Ala Gly Arg Gly Tyr
 70 75 80

's Ala Pro Gly Met Glu Cys Val Lys Ser Arg Lys Arg Arg Lys Gly
 85 90 95

's Ala Gly Ala Ala Ala Gly Gly Pro Gly Val Ser Gly Val Cys Val
 100 105 110

's Lys Ser Arg Tyr Pro Val Cys Gly Ser Asp Gly Thr Thr Tyr Pro
 115 120 125

r Gly Cys Gln Leu Arg Ala Ala Ser Gln Arg Ala Glu Ser Arg Gly
 130 135 140

u Lys Ala Ile Thr Gln Val Ser Lys Gly Thr Cys Glu Gln Gly Pro
 15 150 155 160

eolf-seql-S000001.txt

er Ile Val Thr Pro Pro Lys Asp Ile Trp Asn Val Thr Gly Ala Gln
 165 170 175

al Tyr Leu Ser Cys Glu Val Ile Gly Ile Pro Thr Pro Val Leu Ile
 180 185 190

rp Asn Lys Val Lys Arg Gly His Tyr Gly Val Gln Arg Thr Glu Leu
 195 200 205

eu Pro Gly Asp Arg Asp Asn Leu Ala Ile Gln Thr Arg Gly Gly Pro
 210 215 220

u Lys His Glu Val Thr Gly Trp Val Leu Val Ser Pro Leu Ser Lys
 230 235 240

u Asp Ala Gly Glu Tyr Glu Cys His Ala Ser Asn Ser Gln Gly Gln
 245 250 255

a Ser Ala Ser Ala Lys Ile Thr Val Val Asp Ala Leu His Glu Ile
 260 265 270

o Val Lys Lys Gly Glu Gly Ala Glu Leu
 275 280

10> 192
 11> 339
 12> PRT
 13> Homo sapiens

00> 192

t Asp Gln Asn Asn Ser Leu Pro Pro Tyr Ala Gln Gly Leu Ala Ser
 5 10 15

o Gln Gly Ala Met Thr Pro Gly Ile Pro Ile Phe Ser Pro Met Met
 20 25 30

o Tyr Gly Thr Gly Leu Thr Pro Gln Pro Ile Gln Asn Thr Asn Ser
 35 40 45

u Ser Ile Leu Glu Glu Gln Gln Arg Gln Gln Gln Gln Gln Gln
 50 55 60

eolf-seql-S000001.txt

ln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln
 5 70 75 80

ln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Ala
 85 90 95

al Ala Ala Ala Ala Val Gln Gln Ser Thr Ser Gln Gln Ala Thr Gln
 100 105 110

ly Thr Ser Gly Gln Ala Pro Gln Leu Phe His Ser Gln Thr Leu Thr
 115 120 125

ir Ala Pro Leu Pro Gly Thr Thr Pro Leu Tyr Pro Ser Pro Met Thr
 130 135 140

ro Met Thr Pro Ile Thr Pro Ala Thr Pro Ala Ser Glu Ser Ser Gly
 15 150 155 160

le Val Pro Gln Leu Gln Asn Ile Val Ser Thr Val Asn Leu Gly Cys
 165 170 175

vs Leu Asp Leu Lys Thr Ile Ala Leu Arg Ala Arg Asn Ala Glu Tyr
 180 185 190

sn Pro Lys Arg Phe Ala Ala Val Ile Met Arg Ile Arg Glu Pro Arg
 195 200 205

ir Thr Ala Leu Ile Phe Ser Ser Gly Lys Met Val Cys Thr Gly Ala
 210 215 220

vs Ser Glu Glu Gln Ser Arg Leu Ala Ala Arg Lys Tyr Ala Arg Val
 230 235 240

al Gln Lys Leu Gly Phe Pro Ala Lys Phe Leu Asp Phe Lys Ile Gln
 245 250 255

n Met Val Gly Ser Cys Asp Val Lys Phe Pro Ile Arg Leu Glu Gly
 260 265 270

u Val Leu Thr His Gln Gln Phe Ser Ser Tyr Glu Pro Glu Leu Phe
 275 280 285

eolf-seql-S000001.txt

ro Gly Leu Ile Tyr Arg Met Ile Lys Pro Arg Ile Val Leu Leu Ile
 290 295 300

ne Val Ser Gly Lys Val Val Leu Thr Gly Ala Lys Val Arg Ala Glu
 305 310 315 320

le Tyr Glu Ala Phe Glu Asn Ile Tyr Pro Ile Leu Lys Gly Phe Arg
 325 330 335

/s Thr Thr

210> 193
 211> 184
 212> PRT
 213> Homo sapiens

100> 193

et Ala Ala Ala Gly Gly Ala Arg Leu Leu Arg Ala Ala Ser Ala Val
 5 10 15

eu Gly Gly Pro Ala Gly Arg Trp Leu His His Ala Gly Ser Arg Ala
 20 25 30

y Ser Ser Gly Leu Leu Arg Asn Arg Gly Pro Gly Gly Ser Ala Glu
 35 40 45

a Ser Arg Ser Leu Ser Val Ser Ala Arg Ala Arg Ser Ser Ser Glu
 50 55 60

p Lys Ile Thr Val His Phe Ile Asn Arg Asp Gly Glu Thr Leu Thr
 70 75 80

r Lys Gly Lys Val Gly Asp Ser Leu Leu Asp Val Val Val Glu Asn
 85 90 95

n Leu Asp Ile Asp Gly Phe Gly Ala Cys Glu Gly Thr Leu Ala Cys
 100 105 110

r Thr Cys His Leu Ile Phe Glu Asp His Ile Tyr Glu Lys Leu Asp
 115 120 125

eolf-seql-S000001.txt

la Ile Thr Asp Glu Glu Asn Asp Met Leu Asp Leu Ala Tyr Gly Leu
 130 135 140

ar Asp Arg Ser Arg Leu Gly Cys Gln Ile Cys Leu Thr Lys Ser Met
 145 150 155 160

sp Asn Met Thr Val Arg Val Pro Glu Thr Val Ala Asp Ala Arg Gln
 165 170 175

er Ile Asp Val Gly Lys Thr Ser
 180

210> 194

211> 206

212> PRT

213> Homo sapiens

100> 194

et Thr Ala Ser Val Leu Arg Ser Ile Ser Leu Ala Leu Arg Pro Thr
 5 10 15

er Gly Leu Leu Gly Thr Trp Gln Thr Gln Leu Arg Glu Thr His Gln
 20 25 30

g Ala Ser Leu Leu Ser Phe Trp Glu Leu Ile Pro Met Arg Ser Glu
 35 40 45

o Leu Arg Lys Lys Lys Lys Val Asp Pro Lys Lys Asp Gln Glu Ala
 50 55 60

s Glu Arg Leu Lys Arg Lys Ile Arg Lys Leu Glu Lys Ala Thr Gln
 70 75 80

u Leu Ile Pro Ile Glu Asp Phe Ile Thr Pro Leu Lys Phe Leu Asp
 85 90 95

s Ala Arg Glu Arg Pro Gln Val Glu Leu Thr Phe Glu Glu Thr Glu
 100 105 110

g Arg Ala Leu Leu Leu Lys Lys Trp Ser Leu Tyr Lys Gln Gln Glu
 115 120 125

eolf-seql-S000001.txt

rg Lys Met Glu Arg Asp Thr Ile Arg Ala Met Leu Glu Ala Gln Gln
 130 135 140

lu Ala Leu Glu Glu Leu Gln Leu Glu Ser Pro Lys Leu His Ala Glu
 145 150 155 160

la Ile Lys Arg Asp Pro Asn Leu Phe Pro Phe Glu Lys Glu Gly Pro
 165 170 175

is Tyr Thr Pro Pro Ile Pro Asn Tyr Gln Pro Pro Glu Gly Arg Tyr
 180 185 190

sn Asp Ile Thr Lys Val Tyr Thr Gln Val Glu Phe Lys Arg
 195 200 205

10> 195

11> 75

12> PRT

13> Homo sapiens

100> 195

st Lys Gly Glu Thr Pro Val Asn Ser Thr Met Ser Ile Gly Gln Ala
 5 10 15

g Lys Met Val Glu Gln Leu Lys Ile Glu Ala Ser Leu Cys Arg Ile
 20 25 30

s Val Ser Lys Ala Ala Ala Asp Leu Met Thr Tyr Cys Asp Ala His
 35 40 45

a Cys Glu Asp Pro Leu Ile Thr Pro Val Pro Thr Ser Glu Asn Pro
 50 55 60

e Arg Glu Lys Lys Phe Phe Cys Ala Leu Leu
 70 75

10> 196

11> 317

12> PRT

13> Homo sapiens

00> 196

eolf-seql-S000001.txt

et Arg Leu Gly Pro Arg Thr Ala Ala Leu Gly Leu Leu Leu Cys
 5 10 15

la Ala Ala Ala Gly Ala Gly Lys Ala Glu Glu Leu His Tyr Pro Leu
 20 25 30

ly Glu Arg Arg Ser Asp Tyr Asp Arg Glu Ala Leu Leu Gly Val Gln
 35 40 45

lu Asp Val Asp Glu Tyr Val Lys Leu Gly His Glu Glu Gln Gln Lys
 50 55 60

rg Leu Gln Ala Ile Ile Lys Lys Ile Asp Leu Asp Ser Asp Gly Phe
 5 70 75 80

eu Thr Glu Ser Glu Leu Ser Ser Trp Ile Gln Met Ser Phe Lys His
 85 90 95

yr Ala Met Gln Glu Ala Lys Gln Gln Phe Val Glu Tyr Asp Lys Asn
 100 105 110

er Asp Asp Thr Val Thr Trp Asp Glu Tyr Asn Ile Gln Met Tyr Asp
 115 120 125

rg Val Ile Asp Phe Asp Glu Asn Thr Ala Leu Asp Asp Ala Glu Glu
 130 135 140

u Ser Phe Arg Lys Leu His Leu Lys Asp Lys Lys Arg Phe Glu Lys
 15 150 155 160

a Asn Gln Asp Ser Gly Pro Gly Leu Ser Leu Glu Glu Phe Ile Ala
 165 170 175

ie Glu His Pro Glu Glu Val Asp Tyr Met Thr Glu Phe Val Ile Gln
 180 185 190

u Ala Leu Glu Glu His Asp Lys Asn Gly Asp Gly Phe Val Ser Leu
 195 200 205

u Glu Phe Leu Gly Asp Tyr Arg Trp Asp Pro Thr Ala Asn Glu Asp
 210 215 220

eolf-seql-S000001.txt

ro Glu Trp Ile Leu Val Glu Lys Asp Arg Phe Val Asn Asp Tyr Asp
25 230 235 240

ys Asp Asn Asp Gly Arg Leu Asp Pro Gln Glu Leu Leu Pro Trp Val
245 250 255

al Pro Asn Asn Gln Gly Ile Ala Gln Glu Glu Ala Leu His Leu Ile
260 265 270

sp Glu Met Asp Leu Asn Gly Asp Lys Lys Leu Ser Glu Glu Glu Ile
275 280 285

eu Glu Asn Pro Asp Leu Phe Leu Thr Ser Glu Ala Thr Asp Tyr Gly
290 295 300

rg Gln Leu His Asp Asp Tyr Phe Tyr His Asp Glu Leu
305 310 315

110> 197

111> 239

112> PRT

113> Homo sapiens

100> 197

et Ala Pro Ser Val Pro Ala Ala Glu Pro Glu Tyr Pro Lys Gly Ile
5 10 15

g Ala Val Leu Leu Gly Pro Pro Gly Ala Gly Lys Gly Thr Gln Ala
20 25 30

o Arg Leu Ala Glu Asn Phe Cys Val Cys His Leu Ala Thr Gly Asp
35 40 45

t Leu Arg Ala Met Val Ala Ser Gly Ser Glu Leu Gly Lys Lys Leu
50 55 60

s Ala Thr Met Asp Ala Gly Lys Leu Val Ser Asp Glu Met Val Val
70 75 80

u Leu Ile Glu Lys Asn Leu Glu Thr Pro Leu Cys Lys Asn Gly Phe
85 90 95

eolf-seql-S000001.txt

eu Leu Asp Gly Phe Pro Arg Thr Val Arg Gln Ala Glu Met Leu Asp
 100 105 110

sp Leu Met Glu Lys Arg Lys Glu Lys Leu Asp Ser Val Ile Glu Phe
 115 120 125

er Ile Pro Asp Ser Leu Leu Ile Arg Arg Ile Thr Gly Arg Leu Ile
 130 135 140

is Pro Lys Ser Gly Arg Ser Tyr His Glu Glu Phe Asn Pro Pro Lys
 145 150 155 160

lu Pro Met Lys Asp Asp Ile Thr Gly Glu Pro Leu Ile Arg Arg Ser
 165 170 175

sp Asp Asn Glu Lys Ala Leu Lys Ile Arg Leu Gln Ala Tyr His Thr
 180 185 190

ln Thr Thr Pro Leu Ile Glu Tyr Tyr Arg Lys Arg Gly Ile His Ser
 195 200 205

la Ile Asp Ala Ser Gln Thr Pro Asp Val Val Phe Ala Ser Ile Leu
 210 215 220

la Ala Phe Ser Lys Ala Thr Cys Lys Asp Leu Val Met Phe Ile
 225 230 235

!10> 198

!11> 217

!12> PRT

!13> Homo sapiens

!00> 198

st Ser Ser Lys Val Ser Arg Asp Thr Leu Tyr Glu Ala Val Arg Glu
 5 10 15

l Leu His Gly Asn Gln Arg Lys Arg Arg Lys Phe Leu Glu Thr Val
 20 25 30

u Leu Gln Ile Ser Leu Lys Asn Tyr Asp Pro Gln Lys Asp Lys Arg
 35 40 45

eolf-seql-S000001.txt

```

he Ser Gly Thr Val Arg Leu Lys Ser Thr Pro Arg Pro Lys Phe Ser
 50          55          60

al Cys Val Leu Gly Asp Gln Gln His Cys Asp Glu Ala Lys Ala Val
 5          70          75          80

sp Ile Pro His Met Asp Ile Glu Ala Leu Lys Lys Leu Asn Lys Asn
          85          90          95

ys Lys Leu Val Lys Lys Leu Ala Lys Lys Tyr Asp Ala Phe Leu Ala
          100          105          110

er Glu Ser Leu Ile Lys Gln Ile Pro Arg Ile Leu Gly Pro Gly Leu
          115          120          125

sn Lys Ala Gly Lys Phe Pro Ser Leu Leu Thr His Asn Glu Asn Met
          130          135          140

al Ala Lys Val Asp Glu Val Lys Ser Thr Ile Lys Phe Gln Met Lys
15          150          155          160

ys Val Leu Cys Leu Ala Val Ala Val Gly His Val Lys Met Thr Asp
          165          170          175

sp Glu Leu Val Tyr Asn Ile His Leu Ala Val Asn Phe Leu Val Ser
          180          185          190

eu Leu Lys Lys Asn Trp Gln Asn Val Arg Ala Leu Tyr Ile Lys Ser
          195          200          205

ir Met Gly Lys Pro Gln Arg Leu Tyr
          210          215

:10> 199
:11> 150
:12> PRT
:13> Homo sapiens

00> 199

t Ser Lys Ile Ser Gln Gln Asn Ser Thr Pro Gly Val Asn Gly Ile
          5          10          15

```


eolf-seql-S000001.txt

er Val Ile His Thr Gln Ala His Ala Ser Gly Leu Gln Gln Val Pro
 20 25 30

ln Leu Val Pro Ala Gly Pro Gly Gly Gly Gly Lys Ala Val Ala Pro
 35 40 45

er Lys Gln Ser Lys Lys Ser Ser Pro Met Asp Arg Asn Ser Asp Glu
 50 55 60

yr Arg Gln Arg Arg Glu Arg Asn Asn Met Ala Val Lys Lys Ser Arg
 5 70 75 80

eu Lys Ser Lys Gln Lys Ala Gln Asp Thr Leu Gln Arg Val Asn Gln
 85 90 95

eu Lys Glu Glu Asn Glu Arg Leu Glu Ala Lys Ile Lys Leu Leu Thr
 100 105 110

ys Glu Leu Ser Val Leu Lys Asp Leu Phe Leu Glu His Ala His Asn
 115 120 125

eu Ala Asp Asn Val Gln Ser Ile Ser Thr Glu Asn Thr Thr Ala Asp
 130 135 140

ly Asp Asn Ala Gly Gln
 15 150

?10> 200

?11> 331

?12> PRT

?13> Homo sapiens

!00> 200

st Gly Thr Pro Gln Lys Asp Val Ile Ile Lys Ser Asp Ala Pro Asp
 5 10 15

ir Leu Leu Leu Glu Lys His Ala Asp Tyr Ile Ala Ser Tyr Gly Ser
 20 25 30

's Lys Asp Asp Tyr Glu Tyr Cys Met Ser Glu Tyr Leu Arg Met Ser
 35 40 45

eolf-seql-S000001.txt

ly Ile Tyr Trp Gly Leu Thr Val Met Asp Leu Met Gly Gln Leu His
 50 55 60

rg Met Asn Arg Glu Glu Ile Leu Ala Phe Ile Lys Ser Cys Gln His
 5 70 75 80

lu Cys Gly Gly Ile Ser Ala Ser Ile Gly His Asp Pro His Leu Leu
 85 90 95

yr Thr Leu Ser Ala Val Gln Ile Leu Thr Leu Tyr Asp Ser Ile Asn
 100 105 110

al Ile Asp Val Asn Lys Val Val Glu Tyr Val Lys Gly Leu Gln Lys
 115 120 125

lu Asp Gly Ser Phe Ala Gly Asp Ile Trp Gly Glu Ile Asp Thr Arg
 130 135 140

ne Ser Phe Cys Ala Val Ala Thr Leu Ala Leu Leu Gly Lys Leu Asp
 145 150 155 160

la Ile Asn Val Glu Lys Ala Ile Glu Phe Val Leu Ser Cys Met Asn
 165 170 175

ne Asp Gly Gly Phe Gly Cys Arg Pro Gly Ser Glu Ser His Ala Gly
 180 185 190

ln Ile Tyr Cys Cys Thr Gly Phe Leu Ala Ile Thr Ser Gln Leu His
 195 200 205

.n Val Asn Ser Asp Leu Leu Gly Trp Trp Leu Cys Glu Arg Gln Leu
 210 215 220

o Ser Gly Gly Leu Asn Gly Arg Pro Glu Lys Leu Pro Asp Val Cys
 225 230 235 240

r Ser Trp Trp Val Leu Ala Ser Leu Lys Ile Ile Gly Arg Leu His
 245 250 255

p Ile Asp Arg Glu Lys Leu Arg Asn Phe Ile Leu Ala Cys Gln Asp
 260 265 270

eolf-seql-S000001.txt

lu Glu Thr Gly Gly Phe Ala Asp Arg Pro Gly Asp Met Val Asp Pro
 275 280 285

he His Thr Leu Phe Gly Ile Ala Gly Leu Ser Leu Leu Gly Glu Glu
 290 295 300

ln Ile Lys Pro Val Asn Pro Val Phe Cys Met Pro Glu Glu Val Leu
 05 310 315 320

ln Arg Val Asn Val Gln Pro Glu Leu Val Ser
 325 330

210> 201

211> 537

212> PRT

213> Homo sapiens

400> 201

et Gly Cys Val Gln Cys Lys Asp Lys Glu Ala Thr Lys Leu Thr Glu
 5 10 15

lu Arg Asp Gly Ser Leu Asn Gln Ser Ser Gly Tyr Arg Tyr Gly Thr
 20 25 30

sp Pro Thr Pro Gln His Tyr Pro Ser Phe Gly Val Thr Ser Ile Pro
 35 40 45

sn Tyr Asn Asn Phe His Ala Ala Gly Gly Gln Gly Leu Thr Val Phe
 50 55 60

ly Gly Val Asn Ser Ser Ser His Thr Gly Thr Leu Arg Thr Arg Gly
 5 70 75 80

y Thr Gly Val Thr Leu Phe Val Ala Leu Tyr Asp Tyr Glu Ala Arg
 85 90 95

ir Glu Asp Asp Leu Ser Phe His Lys Gly Glu Lys Phe Gln Ile Leu
 100 105 110

sn Ser Ser Glu Gly Asp Trp Trp Glu Ala Arg Ser Leu Thr Thr Gly
 115 120 125

eolf-seql-S000001.txt

```

lu Thr Gly Tyr Ile Pro Ser Asn Tyr Val Ala Pro Val Asp Ser Ile
  130                      135                      140

ln Ala Glu Glu Trp Tyr Phe Gly Lys Leu Gly Arg Lys Asp Ala Glu
  45                      150                      155                      160

rg Gln Leu Leu Ser Phe Gly Asn Pro Arg Gly Thr Phe Leu Ile Arg
      165                      170                      175

lu Ser Glu Thr Thr Lys Gly Ala Tyr Ser Leu Ser Ile Arg Asp Trp
      180                      185                      190

sp Asp Met Lys Gly Asp His Val Lys His Tyr Lys Ile Arg Lys Leu
      195                      200                      205

sp Asn Gly Gly Tyr Tyr Ile Thr Thr Arg Ala Gln Phe Glu Thr Leu
      210                      215                      220

ln Gln Leu Val Gln His Tyr Ser Glu Arg Ala Ala Gly Leu Cys Cys
  25                      230                      235                      240

rg Leu Val Val Pro Cys His Lys Gly Met Pro Arg Leu Thr Asp Leu
      245                      250                      255

er Val Lys Thr Lys Asp Val Trp Glu Ile Pro Arg Glu Ser Leu Gln
      260                      265                      270

eu Ile Lys Arg Leu Gly Asn Gly Gln Phe Gly Glu Val Trp Met Gly
      275                      280                      285

ir Trp Asn Gly Asn Thr Lys Val Ala Ile Lys Thr Leu Lys Pro Gly
      290                      295                      300

ir Met Ser Pro Glu Ser Phe Leu Glu Glu Ala Gln Ile Met Lys Lys
  5                      310                      315                      320

eu Lys His Asp Lys Leu Val Gln Leu Tyr Ala Val Val Ser Glu Glu
      325                      330                      335

o Ile Tyr Ile Val Thr Glu Tyr Met Asn Lys Gly Ser Leu Leu Asp

```

eolf-seql-S000001.txt

340

345

350

he Leu Lys Asp Gly Glu Gly Arg Ala Leu Lys Leu Pro Asn Leu Val
 355 360 365

sp Met Ala Ala Gln Val Ala Ala Gly Met Ala Tyr Ile Glu Arg Met
 370 375 380

sn Tyr Ile His Arg Asp Leu Arg Ser Ala Asn Ile Leu Val Gly Asn
 385 390 395 400

ly Leu Ile Cys Lys Ile Ala Asp Phe Gly Leu Ala Arg Leu Ile Glu
 405 410 415

sp Asn Glu Tyr Thr Ala Arg Gln Gly Ala Lys Phe Pro Ile Lys Trp
 420 425 430

ar Ala Pro Glu Ala Ala Leu Tyr Gly Arg Phe Thr Ile Lys Ser Asp
 435 440 445

al Trp Ser Phe Gly Ile Leu Leu Thr Glu Leu Val Thr Lys Gly Arg
 450 455 460

al Pro Tyr Pro Gly Met Asn Asn Arg Glu Val Leu Glu Gln Val Glu
 465 470 475 480

cg Gly Tyr Arg Met Pro Cys Pro Gln Asp Cys Pro Ile Ser Leu His
 485 490 495

u Leu Met Ile His Cys Trp Lys Lys Asp Pro Glu Glu Arg Pro Thr
 500 505 510

ie Glu Tyr Leu Gln Ser Phe Leu Glu Asp Tyr Phe Thr Ala Thr Glu
 515 520 525

o Gln Tyr Gln Pro Gly Glu Asn Leu
 530 535

:10> 202

:11> 534

:12> PRT

:13> Homo sapiens

eolf-seql-S000001.txt

400> 202

et Gly Cys Val Gln Cys Lys Asp Lys Glu Ala Thr Lys Leu Thr Glu
 5 10 15

lu Arg Asp Gly Ser Leu Asn Gln Ser Ser Gly Tyr Arg Tyr Gly Thr
 20 25 30

sp Pro Thr Pro Gln His Tyr Pro Ser Phe Gly Val Thr Ser Ile Pro
 35 40 45

sn Tyr Asn Asn Phe His Ala Ala Gly Gly Gln Gly Leu Thr Val Phe
 50 55 60

ly Gly Val Asn Ser Ser Ser His Thr Gly Thr Leu Arg Thr Arg Gly
 65 70 75 80

ly Thr Gly Val Thr Leu Phe Val Ala Leu Tyr Asp Tyr Glu Ala Arg
 85 90 95

ir Glu Asp Asp Leu Ser Phe His Lys Gly Glu Lys Phe Gln Ile Leu
 100 105 110

sn Ser Ser Glu Gly Asp Trp Trp Glu Ala Arg Ser Leu Thr Thr Gly
 115 120 125

lu Thr Gly Tyr Ile Pro Ser Asn Tyr Val Ala Pro Val Asp Ser Ile
 130 135 140

sn Ala Glu Glu Trp Tyr Phe Gly Lys Leu Gly Arg Lys Asp Ala Glu
 145 150 155 160

g Gln Leu Leu Ser Phe Gly Asn Pro Arg Gly Thr Phe Leu Ile Arg
 165 170 175

u Ser Glu Thr Thr Lys Gly Ala Tyr Ser Leu Ser Ile Arg Asp Trp
 180 185 190

p Asp Met Lys Gly Asp His Val Lys His Tyr Lys Ile Arg Lys Leu
 195 200 205

eolf-seql-S000001.txt

p Asn Gly Gly Tyr Tyr Ile Thr Thr Arg Ala Gln Phe Glu Thr Leu
 210 215 220

n Gln Leu Val Gln His Tyr Ser Glu Lys Ala Asp Gly Leu Cys Phe
 5 230 235 240

n Leu Thr Val Ile Ala Ser Ser Cys Thr Pro Gln Thr Ser Gly Leu
 245 250 255

a Lys Asp Ala Trp Glu Val Ala Arg Arg Ser Leu Cys Leu Glu Lys
 260 265 270

s Leu Gly Gln Gly Cys Phe Ala Glu Val Trp Leu Gly Thr Trp Asn
 275 280 285

y Asn Thr Lys Val Ala Ile Lys Thr Leu Lys Pro Gly Thr Met Ser
 290 295 300

o Glu Ser Phe Leu Glu Glu Ala Gln Ile Met Lys Lys Leu Lys His
 310 315 320

o Lys Leu Val Gln Leu Tyr Ala Val Val Ser Glu Glu Pro Ile Tyr
 325 330 335

o Val Thr Glu Tyr Met Asn Lys Gly Ser Leu Leu Asp Phe Leu Lys
 340 345 350

o Gly Glu Gly Arg Ala Leu Lys Leu Pro Asn Leu Val Asp Met Ala
 355 360 365

. Gln Val Ala Ala Gly Met Ala Tyr Ile Glu Arg Met Asn Tyr Ile
 370 375 380

Arg Asp Leu Arg Ser Ala Asn Ile Leu Val Gly Asn Gly Leu Ile
 390 395 400

Lys Ile Ala Asp Phe Gly Leu Ala Arg Leu Ile Glu Asp Asn Glu
 405 410 415

Thr Ala Arg Gln Gly Ala Lys Phe Pro Ile Lys Trp Thr Ala Pro
 420 425 430

eolf-seql-S000001.txt

1 Ala Ala Leu Tyr Gly Arg Phe Thr Ile Lys Ser Asp Val Trp Ser
 435 440 445

2 Gly Ile Leu Leu Thr Glu Leu Val Thr Lys Gly Arg Val Pro Tyr
 450 455 460

3 Gly Met Asn Asn Arg Glu Val Leu Glu Gln Val Glu Arg Gly Tyr
 470 475 480

4 Met Pro Cys Pro Gln Asp Cys Pro Ile Ser Leu His Glu Leu Met
 485 490 495

5 His Cys Trp Lys Lys Asp Pro Glu Glu Arg Pro Thr Phe Glu Tyr
 500 505 510

6 Gln Ser Phe Leu Glu Asp Tyr Phe Thr Ala Thr Glu Pro Gln Tyr
 515 520 525

7 Pro Gly Glu Asn Leu
 530

0> 203
 1> 482
 2> PRT
 3> Homo sapiens

0> 203

Gly Cys Val Gln Cys Lys Asp Lys Glu Ala Thr Lys Leu Thr Glu
 5 10 15

Arg Asp Gly Ser Leu Asn Gln Ser Ser Gly Tyr Arg Tyr Gly Thr
 20 25 30

Pro Thr Pro Gln His Tyr Pro Ser Phe Gly Val Thr Ser Ile Pro
 35 40 45

Tyr Asn Asn Phe His Ala Ala Gly Gly Gln Gly Leu Thr Val Phe
 50 55 60

Gly Val Asn Ser Ser Ser His Thr Gly Thr Leu Arg Thr Arg Gly
 70 75 80

eolf-seql-S000001.txt

```

r Thr Gly Val Thr Leu Phe Val Ala Leu Tyr Asp Tyr Glu Ala Arg
   85                               90                               95

: Glu Asp Asp Leu Ser Phe His Lys Gly Glu Lys Phe Gln Ile Leu
   100                             105                             110

i Ser Ser Glu Gly Asp Trp Trp Glu Ala Arg Ser Leu Thr Thr Gly
   115                             120                             125

i Thr Gly Tyr Ile Pro Ser Asn Tyr Val Ala Pro Val Asp Ser Ile
   130                             135                             140

: Ala Glu Glu Trp Tyr Phe Gly Lys Leu Gly Arg Lys Asp Ala Glu
   150                             155                             160

: Gln Leu Leu Ser Phe Gly Asn Pro Arg Gly Thr Phe Leu Ile Arg
   165                             170                             175

: Ser Glu Thr Thr Lys Gly Ala Tyr Ser Leu Ser Ile Arg Asp Trp
   180                             185                             190

Asp Met Lys Gly Asp His Val Lys His Tyr Lys Ile Arg Lys Leu
   195                             200                             205

Asn Gly Gly Tyr Tyr Ile Thr Thr Arg Ala Gln Phe Glu Thr Leu
   210                             215                             220

Gln Leu Val Gln His Tyr Ser Gly Thr Trp Asn Gly Asn Thr Lys
   230                             235                             240

Ala Ile Lys Thr Leu Lys Pro Gly Thr Met Ser Pro Glu Ser Phe
   245                             250                             255

Glu Glu Ala Gln Ile Met Lys Lys Leu Lys His Asp Lys Leu Val
   260                             265                             270

Leu Tyr Ala Val Val Ser Glu Glu Pro Ile Tyr Ile Val Thr Glu
   275                             280                             285

Met Asn Lys Gly Ser Leu Leu Asp Phe Leu Lys Asp Gly Glu Gly
   290                             295                             300

```

eolf-seql-S000001.txt

```

f Ala Leu Lys Leu Pro Asn Leu Val Asp Met Ala Ala Gln Val Ala
;      310      315      320

f Gly Met Ala Tyr Ile Glu Arg Met Asn Tyr Ile His Arg Asp Leu
;      325      330      335

f Ser Ala Asn Ile Leu Val Gly Asn Gly Leu Ile Cys Lys Ile Ala
;      340      345      350

f Phe Gly Leu Ala Arg Leu Ile Glu Asp Asn Glu Tyr Thr Ala Arg
;      355      360      365

f Gly Ala Lys Phe Pro Ile Lys Trp Thr Ala Pro Glu Ala Ala Leu
;      370      375      380

f Gly Arg Phe Thr Ile Lys Ser Asp Val Trp Ser Phe Gly Ile Leu
;      390      395      400

Thr Glu Leu Val Thr Lys Gly Arg Val Pro Tyr Pro Gly Met Asn
      405      410      415

Arg Glu Val Leu Glu Gln Val Glu Arg Gly Tyr Arg Met Pro Cys
      420      425      430

Gln Asp Cys Pro Ile Ser Leu His Glu Leu Met Ile His Cys Trp
      435      440      445

Lys Asp Pro Glu Glu Arg Pro Thr Phe Glu Tyr Leu Gln Ser Phe
      450      455      460

Glu Asp Tyr Phe Thr Ala Thr Glu Pro Gln Tyr Gln Pro Gly Glu
      470      475      480

Leu

```

```

0> 204
1> 674
2> PRT
3> Homo sapiens

```

eolf-seql-S000001.txt

10> 204

: Ala Pro Gly Gln Ala Pro His Gln Ala Thr Pro Trp Arg Asp Ala
 5 10 15

: Pro Phe Phe Leu Leu Ser Pro Val Met Gly Leu Leu Ser Arg Ala
 20 25 30

: Ser Arg Leu Arg Gly Leu Gly Pro Leu Glu Pro Trp Leu Val Glu
 35 40 45

: Val Lys Gly Ala Ala Leu Val Glu Ala Gly Leu Glu Gly Glu Ala
 50 55 60

: Thr Pro Leu Ala Ile Pro His Thr Pro Trp Gly Arg Arg Pro Gly
 70 75 80

: Glu Ala Glu Asp Ser Gly Gly Pro Gly Glu Asp Arg Glu Thr Leu
 85 90 95

: Leu Lys Thr Ser Ser Ser Leu Pro Glu Ala Trp Gly Leu Leu Asp
 100 105 110

: Asp Asp Gly Met Tyr Gly Glu Arg Glu Ala Thr Ser Val Pro Arg
 115 120 125

: Gln Gly Ser Gln Phe Ala Asp Gly Gln Arg Ala Pro Leu Ser Pro
 130 135 140

: Leu Leu Ile Arg Thr Leu Gln Gly Ser Asp Lys Asn Pro Gly Glu
 150 155 160

: Lys Ala Glu Glu Glu Gly Val Ala Glu Glu Glu Gly Val Asn Lys
 165 170 175

: Ser Tyr Pro Pro Ser His Arg Glu Cys Cys Pro Ala Val Glu Glu
 180 185 190

: Asp Asp Glu Glu Ala Val Lys Lys Glu Ala His Arg Thr Ser Thr
 195 200 205

: Ala Leu Ser Pro Gly Ser Lys Pro Ser Thr Trp Val Ser Cys Pro

eolf-seql-S000001.txt

210 215 220

ly Glu Glu Glu Asn Gln Ala Thr Glu Asp Lys Arg Thr Glu Arg Ser
 25 230 235 240

ys Gly Ala Arg Lys Thr Ser Val Ser Pro Arg Ser Ser Gly Ser Asp
 245 250 255

ro Arg Ser Trp Glu Tyr Arg Ser Gly Glu Ala Ser Glu Glu Lys Glu
 260 265 270

lu Lys Ala His Glu Glu Thr Gly Lys Gly Glu Ala Ala Pro Gly Pro
 275 280 285

n Ser Ser Ala Pro Ala Gln Arg Pro Gln Leu Lys Ser Trp Trp Cys
 290 295 300

n Pro Ser Asp Glu Glu Glu Ser Glu Val Lys Pro Leu Gly Ala Ala
 5 310 315 320

u Lys Asp Gly Glu Ala Glu Cys Pro Pro Cys Ile Pro Pro Pro Ser
 325 330 335

a Phe Leu Lys Ala Trp Val Tyr Trp Pro Gly Glu Asp Thr Glu Glu
 340 345 350

l Glu Asp Glu Glu Glu Asp Glu Asp Ser Asp Ser Gly Ser Asp Glu
 355 360 365

l Glu Gly Glu Ala Glu Ala Ser Ser Ser Thr Pro Ala Thr Gly Val
 370 375 380

Leu Lys Ser Trp Val Tyr Gln Pro Gly Glu Asp Thr Glu Glu Glu
 390 395 400

Asp Glu Asp Ser Asp Thr Gly Ser Ala Glu Asp Glu Arg Glu Ala
 405 410 415

Thr Ser Ala Ser Thr Pro Pro Ala Ser Ala Phe Leu Lys Ala Trp
 420 425 430

eolf-seql-S000001.txt

```

. Tyr Arg Pro Gly Glu Asp Thr Glu Glu Glu Glu Asp Glu Asp Val
  435                               440                               445

> Ser Glu Asp Lys Glu Asp Asp Ser Glu Ala Ala Leu Gly Glu Ala
  450                               455                               460

! Ser Asp Pro His Pro Ser His Pro Asp Gln Ser Ala His Phe Arg
;                               470                               475                               480

' Trp Gly Tyr Arg Pro Gly Lys Glu Thr Glu Glu Glu Glu Ala Ala
  485                               490                               495

! Asp Trp Gly Glu Ala Glu Pro Cys Pro Phe Arg Val Ala Ile Tyr
  500                               505                               510

. Pro Gly Glu Lys Pro Pro Pro Pro Trp Ala Pro Pro Arg Leu Pro
  515                               520                               525

. Arg Leu Gln Arg Arg Leu Lys Arg Pro Glu Thr Pro Thr His Asp
  530                               535                               540

. Asp Pro Glu Thr Pro Leu Lys Ala Arg Lys Val Arg Phe Ser Glu
  550                               555                               560

Val Thr Val His Phe Leu Ala Val Trp Ala Gly Pro Ala Gln Ala
  565                               570                               575

Arg Gln Gly Pro Trp Glu Gln Leu Ala Arg Asp Arg Ser Arg Phe
  580                               585                               590

Arg Arg Ile Ala Gln Ala Gln Glu Glu Leu Ser Pro Cys Leu Thr
  595                               600                               605

Ala Ala Arg Ala Arg Ala Trp Ala Arg Leu Arg Asn Pro Pro Leu
  610                               615                               620

Pro Ile Pro Ala Leu Thr Gln Thr Leu Pro Ser Ser Ser Val Pro
  630                               635                               640

Ser Pro Val Gln Thr Thr Pro Leu Ser Gln Ala Val Ala Thr Pro
  645                               650                               655

```

eolf-seql-S000001.txt

: Arg Ser Ser Ala Ala Ala Ala Ala Leu Asp Leu Ser Gly Arg
 660 665 670

[Gly

.0> 205
 .1> 635
 .2> PRT
 .3> Homo sapiens

0> 205

Ser Val Gly Val Ser Thr Ser Ala Pro Leu Ser Pro Thr Ser Gly
 5 10 15

Ser Val Gly Met Ser Thr Phe Ser Ile Met Asp Tyr Val Val Phe
 20 25 30

Leu Leu Leu Val Leu Ser Leu Ala Ile Gly Leu Tyr His Ala Cys
 35 40 45

Gly Trp Gly Arg His Thr Val Gly Glu Leu Leu Met Ala Asp Arg
 50 55 60

Met Gly Cys Leu Pro Val Ala Leu Ser Leu Leu Ala Thr Phe Gln
 70 75 80

Ala Val Ala Ile Leu Gly Val Pro Ser Glu Ile Tyr Arg Phe Gly
 85 90 95

Gln Tyr Trp Phe Leu Gly Cys Cys Tyr Phe Leu Gly Leu Leu Ile
 100 105 110

Ala His Ile Phe Ile Pro Val Phe Tyr Arg Leu His Leu Thr Ser
 115 120 125

Tyr Glu Tyr Leu Glu Leu Arg Phe Asn Lys Thr Val Arg Val Cys
 130 135 140

Thr Val Thr Phe Ile Phe Gln Met Val Ile Tyr Met Gly Val Val
 150 155 160

eolf-seql-S000001.txt

```

1 Tyr Ala Pro Ser Leu Ala Leu Asn Ala Val Thr Gly Phe Asp Leu
   165                               170                   175

2 Leu Ser Val Leu Ala Leu Gly Ile Val Cys Thr Val Tyr Thr Ala
   180                               185                   190

3 Gly Gly Leu Lys Ala Val Ile Trp Thr Asp Val Phe Gln Thr Leu
   195                               200                   205

4 Met Phe Leu Gly Gln Leu Ala Val Ile Ile Val Gly Ser Ala Lys
   210                               215                   220

5 Gly Gly Leu Gly Arg Val Trp Ala Val Ala Ser Gln His Gly Arg
   230                               235                   240

6 Ser Gly Phe Glu Leu Asp Pro Asp Pro Phe Val Arg His Thr Phe
   245                               250                   255

7 Thr Leu Ala Phe Gly Gly Val Phe Met Met Leu Ser Leu Tyr Gly
   260                               265                   270

8 Asn Gln Ala Gln Val Gln Arg Tyr Leu Ser Ser Arg Thr Glu Lys
   275                               280                   285

9 Ala Val Leu Ser Cys Tyr Ala Val Phe Pro Phe Gln Gln Val Ser
   290                               295                   300

10 Cys Val Gly Cys Leu Ile Gly Leu Val Met Phe Ala Tyr Tyr Gln
   310                               315                   320

11 Tyr Pro Met Ser Ile Gln Gln Ala Gln Ala Ala Pro Asp Gln Phe
   325                               330                   335

12 Leu Tyr Phe Val Met Asp Leu Leu Lys Gly Leu Pro Gly Leu Pro
   340                               345                   350

13 Leu Phe Ile Ala Cys Leu Phe Ser Gly Ser Leu Ser Thr Ile Ser
   355                               360                   365

14 Ala Phe Asn Ser Leu Ala Thr Val Thr Met Glu Asp Leu Ile Arg
   370                               375                   380

```

eolf-seql-S000001.txt

ro Trp Phe Pro Glu Phe Ser Glu Ala Arg Ala Ile Met Leu Ser Arg
 95 390 395 400
 ly Leu Ala Phe Gly Tyr Gly Leu Leu Cys Leu Gly Met Ala Tyr Ile
 405 410 415
 er Ser Gln Met Gly Pro Val Leu Gln Ala Ala Ile Ser Ile Phe Gly
 420 425 430
 et Val Gly Gly Pro Leu Leu Gly Leu Phe Cys Leu Gly Met Phe Phe
 435 440 445
 co Cys Ala Asn Pro Pro Gly Ala Val Val Gly Leu Leu Ala Gly Leu
 450 455 460
 al Met Ala Phe Trp Ile Gly Ile Gly Ser Ile Val Thr Ser Met Gly
 465 470 475 480
 ie Ser Met Pro Pro Ser Pro Ser Asn Gly Ser Ser Phe Ser Leu Pro
 485 490 495
 ir Asn Leu Thr Val Ala Thr Val Thr Thr Leu Met Pro Leu Thr Thr
 500 505 510
 ie Ser Lys Pro Thr Gly Leu Gln Arg Phe Tyr Ser Leu Ser Tyr Leu
 515 520 525
 p Tyr Ser Ala His Asn Ser Thr Thr Val Ile Val Val Gly Leu Ile
 530 535 540
 l Ser Leu Leu Thr Gly Arg Met Arg Gly Arg Ser Leu Asn Pro Ala
 545 550 555 560
 r Ile Tyr Pro Val Leu Pro Lys Leu Leu Ser Leu Leu Pro Leu Ser
 565 570 575
 s Gln Lys Arg Leu His Cys Arg Ser Tyr Gly Gln Asp His Leu Asp
 580 585 590
 r Gly Leu Phe Pro Glu Lys Pro Arg Asn Gly Val Leu Gly Asp Ser

eolf-seql-S000001.txt

595

600

605

rg Asp Lys Glu Ala Met Ala Leu Asp Gly Thr Ala Tyr Gln Gly Ser
610 615 620

er Ser Thr Cys Ile Leu Gln Glu Thr Ser Leu
25 630 635

eolf-seql-S000001.txt

1160

.0> 36
.1> 666
.2> DNA
.3> Homo sapiens

00> 36
ggcttgg ctgcgccctc tcgcgccgca cgctctgcgg gttcctccct tcttccgagc
60

tcctctg gccgccgcgc gggagagagg ccgagatggc agatgagatt gccaaaggctc
120

tcgctcg gcctggtggc gacacgatct ttgggaagat catccgcaag gaaataccag
180

aaatcat ttttgaggat gaccggtgcc ttgctttcca tgacatttcc cctcaagcac
240

acacattt tctggtgata cccaagaaac atatatccca gatttctgtg gcagaagatg
300

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360

tgaataa gggttatcga atggtggtga atgaaggttc agatggtgga cagtctgtct
420

acgttca tctccatgtt cttggaggtc ggcaaatgca ttggcctcct ggtaagcac
480

ttgggga taattttctc ttcttttaggc aatgattaag ttaggcaatt tccagtatgt
540

gtaacac acttattttt gcctgtgtat ggagagattc aagaaataat tttaaaaccg
600

acataat aaaagacatt gttgcatggc ttgtaaaaaa aaaaaaaaaa aaaaaaaaaa
660

aaa
666

0> 37
1> 3683
2> DNA
3> Homo sapiens

0> 37
ggcaggc ggcggctgca gggcagggtcc agggggccaca tggctgaggg ggacgcaggg
60

eolf-seql-S000001.txt

.200

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.320

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.380

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.440

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.560

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.620

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.680

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740

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800

gtgatct tcaactgagga attagaacta tgatagaagt taggctgtgg caaatgggac
860

cgtagag tgggatagag gtggcagaat gaacctggtg tagggcagga gtatgttgtg
920

ttacatc aatttgatgc atgctttcca tctgcactcc agacggcttt ctcaagtcca
980

ttttgca gagagaagga gcaaaccttt tcattggaaa aacagaaaca accctcccc
040

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100

atttaga tagtgaaatt tacctttgag atataacaat aagtgattaa ctgttcactt
160

gatgtaa tggcaaacaa ttgttaaaag ttattaactg atcacagatt tgcttgact
220

cttcca gggaggggaac agaagttagg aggcaacttt gggatggtgc tagagcatgg
280

eolf-seql-S000001.txt

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180

caaatgga cactttgctt gcagggtgatg ctgccgaatg aatacccagg tacagctcca
240

tatctacc agttgaatgc tccttggctt aaagggcaag aacgtgcgga tttatcaa
300

tccttgagg aaatatatat tcagaatata ggtgaaagta ttctttacct gtgggtggag
360

aataagag atgttcttat acaaaaatct cagatgacag aaccaggccc agatgtaaag
420

gaaaactg aagaggaaga tgttgaatgt gaagatgatc tcatttttagc atgtcagccg
480

aagttcgg ttaaagcatt ggattttgat atcagtgaaa.ctcggacaga agtagaagta
540

agaattac ctccgattga tcatggcatt cctattacag accgaagaag tacttttcag
600

acacttgg ctccagtggg ttgtcccaaa caggtgaaaa tggttctttc caaattgtat
660

gaataaga aaatagctag tgccaccac aacatctatg cctacagaat atattgtgag
720

taaacaga ctttcttaca ggattgtgag gatgatgggg aaacagcagc tgggtgggcgt
780

cttcac tcattggagat ttggaatgtg aagaatgtca tgggtggtagt atcacgctgg
840

ggaggga ttctgctagg accagatcgc tttaaacata tcaacaactg tgccagaaac
900

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960

aaaaaag taagaaaaga caagaagagg aatgaacatt aatacctgaa actataggaa
1020

tttaattt gcctataatt atatatacat tccatagtca tcaaggaata tattgtgcag
1080

gagtatc cttgactgct taagtcagcc agttcagcat ggataccaac attagctttt
1140

cttggtt atatcatctg caaaaaatag agaacttatg atctattcat gtgtgtttca

eolf-seql-S000001.txt

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340

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400

jatggatt ctgaaatata aattctaaat tatatttggt ataactatat tttatgttgt
460

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520

ttatgctt tgtgttttaa ctgttaaaat aatttaaaaa ttaattatct tacataatta
580

taagttaa aaactattaa cattaaataa tttcacaatt tcaacatgtc aaacctatga
640

tgagatag gaaacaatga gaaacttact tttgctcctt tatacagaat tattaactat
700

ttactaa ctaaaaaact ctagtattct ttacctaaag tcaattggct ggtaagaggg
760

gatgcaa aattctccag ctctgaactt ggagctactt cacactctac tcttaatgga
820

ttgaact aatgatagat agtatctttt tctctatctt aaaatttttg tcttgattag
880

attttc agttctccat ataataattt tctacaatca gatctatgct gtggcatatt
940

ctttatt taaaaatttt tttttagaga tgagttcttg ctctgtcacc taggctggag
1000

agtgga tgatcatggc tcaactgcagc cttgacctc cagcctgcca agtagctggg
1060

acagaca ggcattgtgt attacacctg gctaattttt aaagtttttt ttgtaaagat
1120

gtctttc tatgttgccc aggctcgtct tgagctcctg gcctcaatcg atcttctgc
1180

ggttttg gaattacagg tgtgagccac catgcctggc ctgctttgac atattttata
1240

tgtaaat tacaaatagt cttcatatgc cagaatataa gagcaagtgt tatctacttt
1300

gatggga attgcagaag ctgcatcaaa agtatgcttt gaggtatata tagtgaaca
1360

eolf-seql-S000001.txt

gcctttct gaagagaatt atatcaaact aattacaacc aagaaataat agtatgaagc
3420

atgctggt tggaggacag gaaaatttat cgggaaaatt acataatccc tctgattcca
3480

atccagag atagccatta ttattaatat ttggtatgta catccttata ttatTTTTTT
3540

tatgcatg attttgtata tatggttatt tttctttcca taaaaatggt attaaactgt
3600

atactggt ttgtagccta catatttcat atagaagtat attgttaaca ttttccatgt
3660

ataaatat tctatggctt tct
3683

10> 38
11> 3251
12> DNA
13> Homo sapiens

00> 38
gcaactat gaaataatcg tagtatgaga ggcagagatc ggggcgagac aatggggatg
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120

gcgcccc tccgcgcgcg cctcccccg agtgcgaggc gggaggaggc ggcggcggcc
180

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240

ggaggagg ccgaggcgcc ggaggaggcc gaggcgccgg agcaggagga ggccggccgg
300

gcggcatg agacgagcgt ggcggccgcg gctgctcggg gccgcgctgg ttgccattg
360

agcggcgt ctgcagctcg cttcaagatg gccgcttggc tcgcattcat tttctgctga
420

gactttta actttcattg tcttttccgc ccgcttcgat cgcctcgcgc cggctgctct
480

ccgggatt ttttatcaag cagaaatgca tcgaacaacg agaatcaaga tcactgagct
540

atccccac ctgatgtgtg tgctttgtgg agggacttc attgatgcca caaccataat
600

eolf-seql-S000001.txt

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660

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720

aaactctc caagatattg tatacaaatt agttccaggg cttttcaaaa atgaaatgaa
780

gaagaagg gatttttatg cagctcatcc ttctgctgat gctgccaatg gctctaata
840

atagagga gaggttgcag atgaagataa gagaattata actgatgatg agataataag
900

tatccatt gaattctttg accagaacag attggatcgg aaagtaaaca aagacaaaga
960

aatctaag gaggaggtga atgataaaag atacttacga tgcccagcag caatgactgt
1020

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1080

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1140

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1200

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1260

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1380

gaatgga accagcaaca gccccagcgg taaccaccaa tcttcttttg ccaatagacc
1440

gaaatca tcagtaaattg ggtcatcagc aacttcttct ggttgatacc tgagactggt
1500

gaaaaaa attttaaac cctgatttat atagatatct tcatgccatt acagctttct
1560

tgctaata acatgtgact atcgtccaat ttgctttctt ttgtagtgac attaaatttg
1620

ataaaaag atggactaca tgtgatactc ctatggacgt taattgaaaa gaaagattgt
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eolf-seql-S000001.txt

1740

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1920

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1980

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2040

aaccgatac aaagaaaagt gaacttcagt ttacaatct gtatgcctaa aagcgggtac
2100

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2160

cttggttg acaatgccat attggtatat gacataacag gaaacagtat tgtatgatat
2220

ctataaat gctataaaga aatattgtgt ttcattgcatt cagaaatgat tgtaaaaatt
2280

cccaactg gttcgacctt tgcagatacc cataacctat gttgagcctt gcttaccagc
2340

agaatatt ttaaatgtgg atatctaatt ctaaagtctg ttccattaga agcaattggc
2400

atctttct atactttata tacttttctc cagtaataca tgtttacttt aaaaattggt
2460

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2580

ctaaataa accagcaggt tgctaaaaga aggcatttta tctaaagtta ttttaatagg
2640

gtatagca gtaattttta atttaagagt tgcttttaca gttaacaatg gaatatgcct
2700

ctgctat gtctgaaaat agaagctatt tattatgagc ttctacaggt atttttaaat
2760

cgcaagca tgttgaattt aaaatatgaa taaccccacc caacaatttt cagtttattt
2820

eolf-seql-S000001.txt

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:940
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:060
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:120
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:180
:aaggata ttcattttaga aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa
:240
:aaaaaaa a
251

0> 39
1> 2855
2> DNA
3> Homo sapiens

0> 39
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60
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120
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180
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480

eolf-seql-S000001.txt

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780

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840

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960

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1080

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1200

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1440

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1500

cctcccc gtggaggcat ggtgcagaaa ccaggatttg gagtgggaag ggggcttgctg
1560

eolf-seql-S000001.txt

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1800

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1860

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1920

atttggtg tgtttcattc attggaatat ttcttatttt ctacgtgttt gaaaagcctg
1980

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2040

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2100

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2160

acaaaaca attctaaaac ctaactgttt ttaccattga aatttaaatt gtgataatag
2220

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2400

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2460

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2520

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2580

ccctaaat agttcagcat ttgtattttt attctgggtat ctaatcagat tcctaatcat
2640

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eolf-seql-S000001.txt

2700

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2760

attgatgg gcatgcagtg ggtgttactt ggaaatggcc aattttttatt aaaatatttc
2820

gaagaaaa tttaaaaaaa aaaaaaaaaa aaaaa
2855

10> 40

11> 1396

12> DNA

13> Homo sapiens

00> 40

gtaattaa aaggcggcgg aagaaggtgg gagggtcatg acgcagcgag tttcagtcgt
60

cttttctg ggggcatcgc ggcgtcccct tttttttgcc tttaaagtaa aacgtcgccc
120

acgcaccc cccgcgtatt tcggggggcg gaggcggcgg gccacggcgc gaagaggggg
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240

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300

cccttget ctgtatgccg ctctctcccg gcgcggccgc cgccgatcac agcagcagga
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420

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480

attcaatt tggtgaaggc caatttgtgg actcctacga tccaaccata gaaaacactt
540

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600

caagatga atattctatc tttcctcaga catactccat agatattaat ggctatattc
660

gtgtattc tgttacatca atcaaaagtt ttgaagtgat taaagttatc catggcaa
720

ctggatat ggtggggaaa gtacaaatac ctattatggt ggttgggaat aagaaagacc

[illegible]

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Time: 11:27:02 AM
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